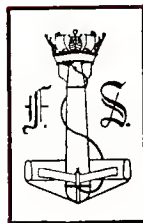


JANE'S FIGHTING SHIPS

FOUNDED IN 1897 BY FRED T. JANE

COMPILED AND EDITED BY
RAYMOND V. B. BLACKMAN, M.I.Mar.E., M.R.I.N.A

1967 - 68



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M.I.Mar.E., M.R.I.N.A.

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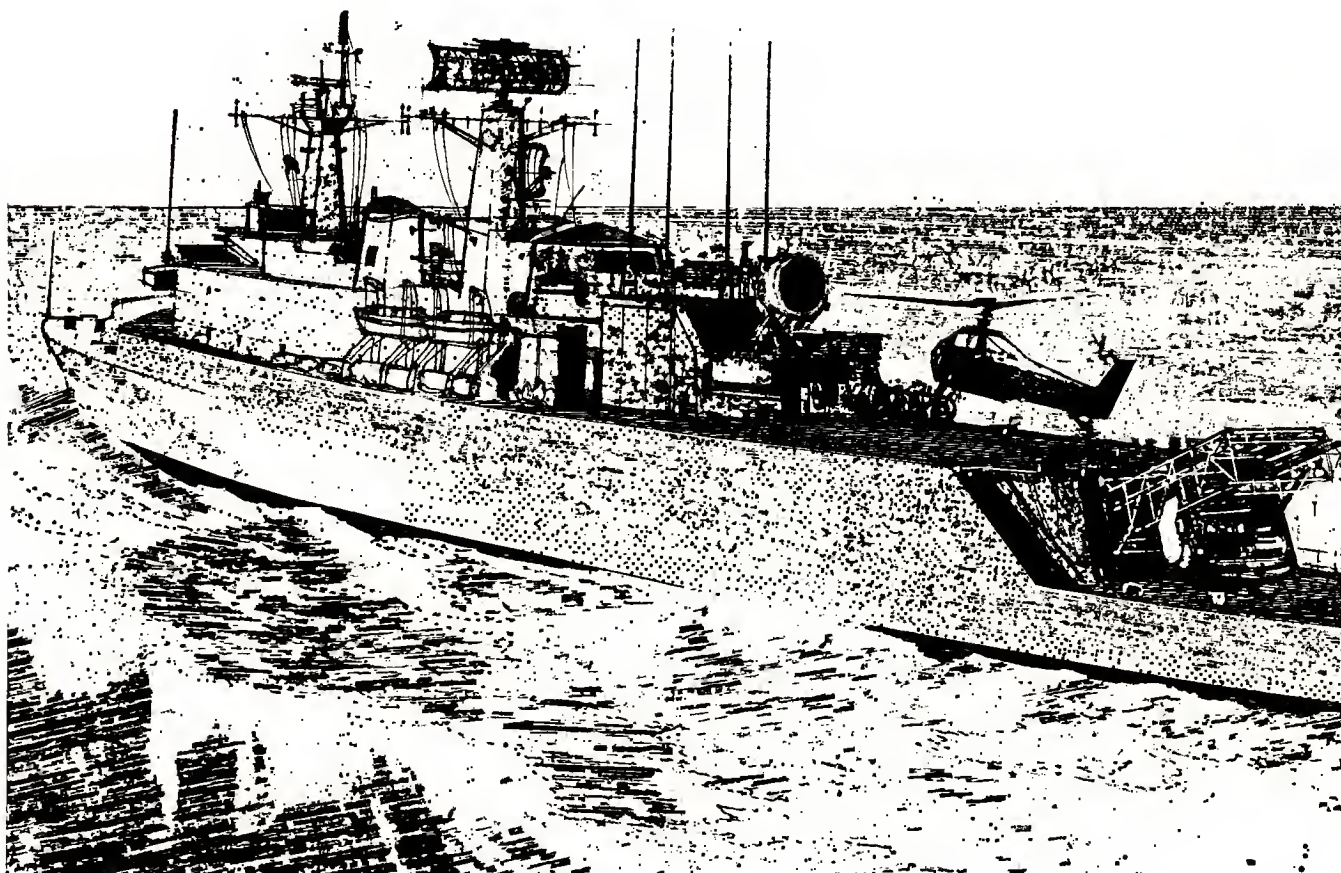
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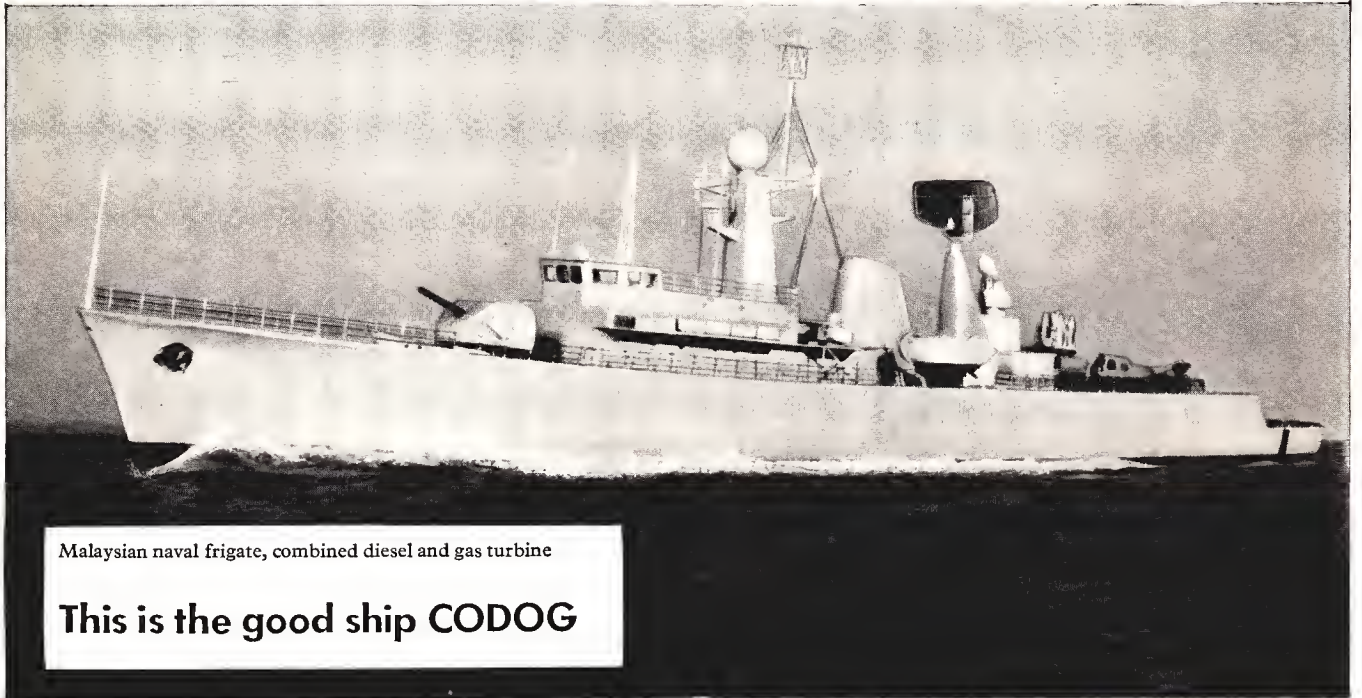
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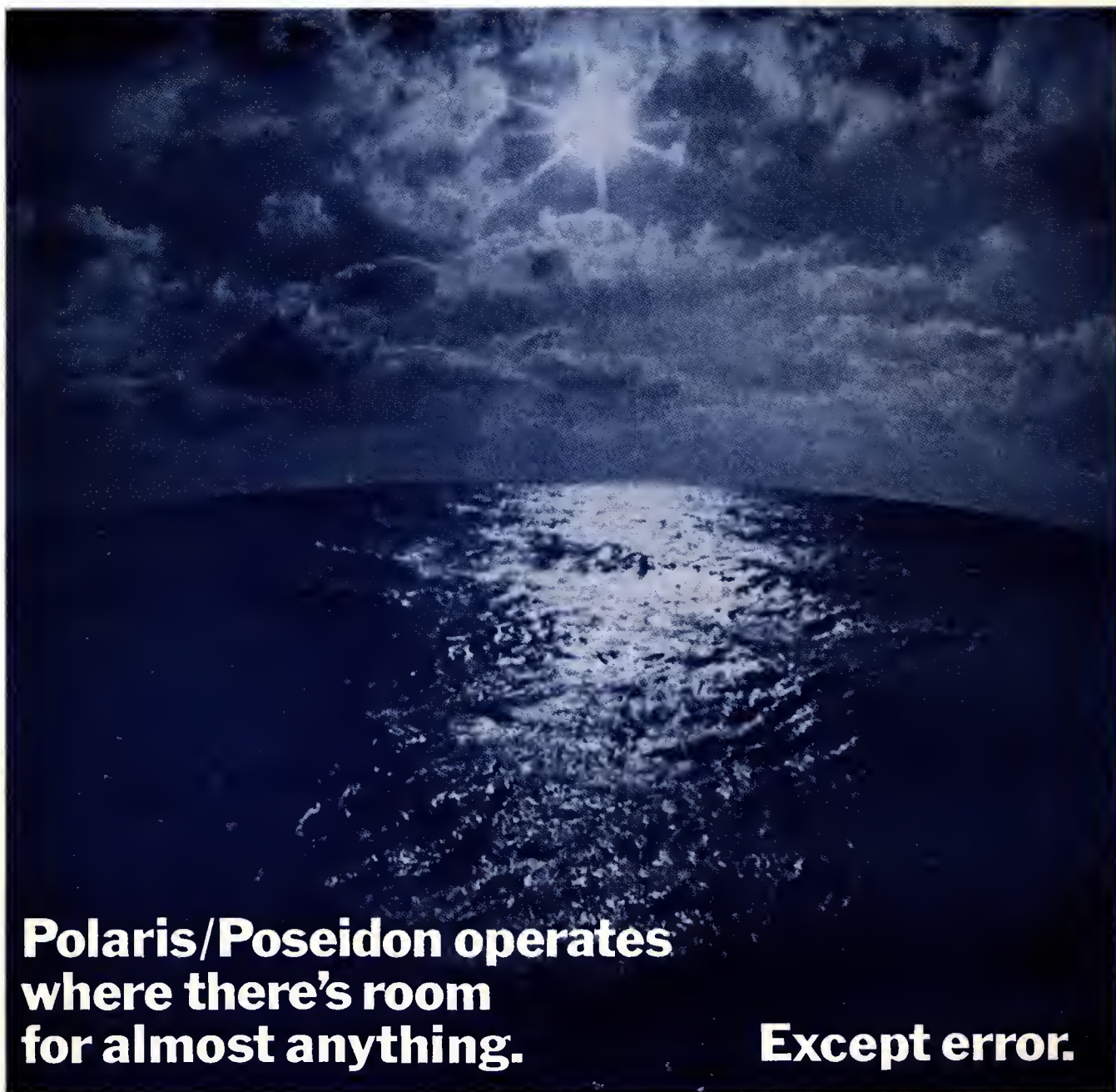


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C 16	Dragueurs de mines côtiers et d'intérieur	A 10	Lance-roquettes anti-sous-marins
N 4	Dragueurs de mines non magnétiques	A 16	Machines auxiliaires
D 9	Ecluses de docks	E 3	Machines auxiliaires électriques
E 1	Economiseurs	S 4	Machines de navires
P 18	Editeurs	D 1	Machines de pont
S 26	Elimination des tensions	P 17	Machines de propulsion

H 5	Machines hydrauliques	P 14	Réceptacles sous pression
S 18	Matériel classique de production de vapeur	G 7	Régulateurs
F 11	Matériel de distillation d'eau fraîche	G 8	Régulateurs de vitesses moteur
C 4	Matériel de manutention des marchandises	T 20	Remorqueurs
D 8	Matériel de plongée	W 1	Réparations de navires de guerre
H 6	Matériel hydraulique	M 3	Réseaux marins Loran A & C
S 19	Matériel nucléaire de production de vapeur	T 3	Réservoirs de stockage de pétrole et d'eau
R 15	Mécanismes de renversement de marche	A 11	Roquettes anti-sous-marins
E 15	Moteurs à turbine à gaz	C 19	Service de caloul
E 16	Moteurs à turbine à vapeur	S 9	Simulateurs
E 13	Moteurs d'avions	W 6	Soudure à l'arc, à l'arc en atmosphère d'argon ou au gaz
E 14	Moteur Diesel	S 29	Sous-marine
D 4	Moteurs Diesel auxiliaires	S 30	Sous-marine (conventionnels)
D 5	Moteurs diesel principaux de propulsion	S 5	Stabilisateurs de navires
M 16	Moteurs électriques	R 8	Statoréacteurs
R 14	Moteurs réversibles actionnés à la vapeur ou à l'air comprimé	S 31	Surchauffeurs
M 8	Mouilleurs de mines	W 4	Systèmes d'armement
A 7	Munitions	W 5	Systèmes d'armements (composants de radar ultrasonique)
D 11	Navires à cargaisons sèches	M 10	Systèmes de commande de missiles
C 23	Navires à conteneur	C 5	Systèmes de télécommande de pétrole en vrac
G 10	Navires à engins guidés	S 8	Systèmes et appareils de signalisation
M 11	Navires à missiles	O 3	Systèmes et brûleurs à mazout
P 2	Navires à passagers	T 6	Systèmes télégraphiques
W 2	Navires de guerre	R 10	Télécommandes
R 12	Navires de recherches	R 9	Téléètres
S 1	Navires de sauvetage et de barrage	L 3	Téléètres à laser
C 6	Navires-cargo	T 7	Téléoteurs
T 1	Navires-citernes	T 9	Téléphone à haut-parleur
T 2	Navires-citernes (petits)	T 8	Téléphone sans pile
M 6	Navires marchands	T 15	Torpilles et tubes lance-torpilles
C 20	Ordinateurs	L 5	Transporteurs de gaz de pétrole liquides
S 32	Panneaux de commande	B 3	Transporteurs en vrac
S 33	Panneaux de commande et appareillage de commutation	X 1	Travaux aux rayons X
A 9	Patrouille anti-sous-marins	W 7	Treillis
F 1	Patrouilleurs rapides	A 8	Treillis à munitions
P 3	Patrouilleurs, vedettes, ravitailleurs et péniches	T 19	Tubes
L 2	Péniches de débarquement	C 21	Tubes de condenseurs
P 5	Périscopes	T 23	Turbines
S 28	Périscopes de sous-marine	G 2	Turbines à gaz
F 9	Phares d'éclairage	T 24	Turbines à gaz d'échappement
C 14	Pièces coulées en acier	T 25	Turbines à gaz marines
C 8	Pièces coulées en aluminium-bronze	S 20	Turbines à vapeur
C 9	Pièces coulées en fer à grand rendement	T 26	Turbines à vapeur marines
C 11	Pièces moulées en coquille	P 9	Tuyaux d'eau de mer
C 12	Pièces coulées en fer à graphites sphéroïdal	P 10	Tuyaux en acier soudé et sans soudure
C 13	Pièces coulées en fer "Ni-Resist" à graphite sphéroïdal	P 8	Tuyaux en cuivre et en laiton
C 10	Pièces coulées en métaux non ferreux	P 7	Tuyaux en fonte
S 22	Pièces de forge, plaques et sections, pièces estampées en acier	V 3	Vannes automatiques à plaque ou à diaphragme
D 6	Pièces de rechange pour moteurs diesel	V 1	Vannes et robinets
P 1 E 11	Pièces pour moteurs Diesel	V 2	Vanne et robinets hydrauliques
M 1	Pièces usinées en métaux ferreux	M 15	Vedettes lance-torpilles
M 2	Pièces usinées en métaux non ferreux	A 5	Véhicules à coussin d'air
A 15	Pilotage automatique	V 4	Ventilateurs et canalisations d'air
G 16	Pilotes gyroscopiques	Y 1	Yachts (à moteur)
P 11	Pistons, segments et axes de pied de bielle		
A 12	Plaques de blindage		
P 19	Pompes		
F 7	Pompes d'incendie		
P 13	Pontons automoteurs		
A 3	Porte-avions		
F 3	Produits optiques réalisés à partir de fibres		
P 15	Propergols		
D 12	Propriétaires de cales sèches		
T 4	Publications techniques		
C 24	Pupitres de commande (électriques)		
R 2	Radar de contrôle de tir		
R 3	Radar de surveillance des ports		
M 4	Radar marin		
N 2	Radar naval		
R 4	Radar pour la navigation, et pour l'avertissement menant à l'interception		
T 10	Ravitailleurs		
F 2	Réchauffeurs d'eau d'alimentation		
F 4	Réceptacles en fibre de verre et autres produits		

Die Verweisungszahl bei jedem nachfolgend aufgeführten Gegenstand gibt die entsprechende englische Überschrift auf den Seiten 16 bis 35

C 2	Ankerwinden und Auflaufhaspeln	R 7	Funksender und -empfänger
P 17	Antriebsmaschinen	F 10	Gabelstapler
P 15	Antriebsmittel	G 2	Gasturbinen
I 1	Anzeigegeräte, Elektrische	G 1	Gasturbinenschiffe
N 5	Atomkraftanlagen	E 18	Geleitschiffe
T 16	Ausbildungsgeräte	G 6	Generatoren, Elektro-
S 9	Ausbildungsgeräte (Simulatoren)	G 13	Geschütze und Lafettierung
F 8	Ausrüstung, Schiffs-	G 14	Geschützrichtaufsätze und Höhengesucher
R 11	Austauschteile für Dieselmotoren	G 5	Getriebe, Rückwärts-, Reduktions-
G 3	Autofahren	G 3	Getriebegehäuse
A 15	Automatische Steuerung	G 4	Getrieberäder und Getriebe
D 10	Bagger	F 4	Glaefaerboote und andere Erzeugnisse
M 1	Bearbeitete Eisenteile	B 3	Grosstransporter
M 2	Bearbeitete Nichteisenteile	C 12	Gusseisenteile, Kugelgraphit-
C 23	Behälterschiffe	C 13	Gussteile, Kugelgraphit-, Ni-Resist
H 1	Beheizte Fenster	C 8	Gussteile, Aluminium-Bronze-
T 10	Beiboote	C 9	Gussteile, Hochfeste Eisen-
E 5	Beleuchtungskörper (Armaturen)	C 11	Gussteile, maskengeformte
S 1	Bergungs- und Hafensperren-Verlegungsschiffe	C 10	Gussteile, Nichteisen-
O 3	Brennölanlagen und Brenner	G 14	Gussteile, Stahl-
F 13	Brennöleinspritzanlagen	G 16	Gyroskop-Steueranlagen
C 20	Computer	M 6	Handelsschiffe
C 19	Computer, Wartung u. Verkauf	D 2	Heissdampfkühler
S 19	Dampferzeugungsanlage, Atom-	A 16	Hilfsmaschinen
S 18	Dampferzeugungsanlage, herkömmlich	H 3	Hovercraft (Luftkissenfahrzeuge)
B 2	Dampfkeessel	H 6	Hydraulische Anlagen
S 20	Dampfturbinen	H 4	Hydraulische Geräte
D 1	Deckmaschinenanlagen	H 5	Hydraulische Maschinen
D 7	Dieselmotoren, Hauptantriebs-	I 5	Instrumente, Elektronische
D 5	Dieselmotoren, Hauptantriebs-	I 8	Instrumente für Versuchseinrichtungen
D 4	Dieselmotoren, Hilfs-	I 6	Instrumente, Nautische
D 6	Dieselmotoren-Ersatzteile	I 7	Instrumente, Präzisions-
D 9	Docktore	I 4	Instrumententeile (Mechanische)
G 1	Dockverschlusspontons	Y 1	Jachten (Motor-)
C 17	Druckluftanlasser für Gasturbinen und Dieselmotoren	W 4	Kampfanlagen
S 13	Echolotausrüstungen	W 5	Kampfanlagen (Unterwasserortungsteile)
I 3	Einspritzausrüstung	G 12	Kanonenboote
E 1	Ekonomiser	F 14	Kessel
E 4	Elektroausrüstung	F 11	Kolben, Kolbenringe und Kolbenbolzen
E 3	Elektrohilfsmaschinen	O 2	Kompressoren für ölfreie Luft
E 8	Elektrohydraulische Zusatzgeräte	C 26	Korvetten
E 6	Elektroinstallation und Reparatur	C 28	Kräne, Land-
E 2	Elektrokabel	C 27	Kräne, Schiffs-
E 9	Elektronische Ausrüstung	G 17	Kreiselskompass
E 7	Elektroschaltanlagen	G 15	Kreiselmagnetkompass für Schnellboote
R 9	Entfernungsmesser	C 29	Kreuzer
S 14	Ersatzteile für Dieselmotoren	W 2	Kriegsschiffe
F 3	Faseroptik	W 1	Kriegsschiff-Reparaturbetriebe
G 11	Ferngelenkte Flugkörper	C 16	Küsten- und Flachwasser-Minensuchboote
G 9	Ferngelenkte Flugkörper, Wartungsausrüstung	C 4	Ladungsumschlageinrichtungen
G 10	Ferngelenkte-Flugkörper-Schiffe	L 4	Lampen und Beleuchtung
B 1	Ferngläser	L 1	Lampenhalter (Fassungen)
T 5	Fernmeldeanlagen	A 14	Landungsboote und -schiffe
R 10	Fernsteuerungen	A 13	Landungsfahrzeuge
F 6	Feuerleitungs- und Schiessausrüstung	L 2	Landungsfahrzeuge
F 5	Feuerlösch- und Bergungsfahrzeuge	L 3	Laaser-Entfernungsmesser
F 7	Feuerlöschpumpen	L 7	Lautsprecheranlagen
T 17	Fischdampfer	A 5	Luftkissenfahrzeuge
R 5	Flugfunk	A 1	Luftverdichter
M 11	Flugkörper-Schiffe	M 3	Marineflugzeug für Funkpeilung A/C
A 4	Flugzeuginstrumente	N 1	Marinegeschütze
A 2	Flugzeuglandeabstimmungsvorrichtungen	N 2	Marineradar
A 3	Flugzeugträger	G 7	Maschinenregler
L 5	Flüssiggasbehälter (Petroleum-)	M 5	Materialverladeanlagen
R 12	Forschungsschiffe	L 6	Megaphone
C 7	Frachtraumüberwachungsgeräte	M 1	Mikrofonanlagen
C 6	Frachtschiffe	M 8	Minenleger
F 12	Fregatten	M 9	Minensuchboote
F 11	Frischwasserdestillieranlagen	M 12	Modellhersteller
R 6	Funkanlagen	M 15	Motoranlasser

S 15 Motorboote
 E 12 Motordrehzahlregler
 G 8 Motordrehzahlregler
 E 16 Motoren, Dampfturbinen-
 E 14 Motoren, Diesel
 M 16 Motoren, Elektro-
 E 15 Motoren, Gasturbinen-
 M 13 Motorkontrollanlagen
 E 10 Motorkontrollgeräte und Datenschreiber
 E 11 Motortelle, Diesel-
 M 15 Motortorpedoboote
 A 7 Munition
 A 8 Munitionsaufzüge
 N 3 Navigationsanlagen
 H 8 Nautische Vermessungsgeräte
 O 1 Ölbohranlagen
 C 5 Ölregelungsvorrichtungen für Tanker
 A 12 Panzerplatten
 P 2 Passagierschiffe
 P 3 Patrouillenschiffe, -Barkassen, -Beiboote und -Pinassen
 F 1 Patrouillenschnellboote
 P 5 Periskope
 F 4 Periskopverkleidungen
 E 17 Planetengetriebe
 P 13 Pontons, selbstfahrende
 I 2 Positionslampen
 P 19 Pumpen
 P 20 Pumpen, Einzelteile
 R 2 Radar für Feuerleitung
 R 3 Radar für Hafenaufsicht
 R 4 Radar für Navigation, Warnung, Abfang
 R 1 Radarantennen
 M 10 Raketensteueranlagen
 S 10 Rauchmarkierungsvorrichtungen
 T 19 Rohre
 P 7 Rohre, Gusseisen-
 P 8 Rohre, Kupfer- und Messing-
 P 9 Rohre, Seewasser-
 P 10 Rohre, Stahl-, geschweisst und nahtlos
 P 6 Rohrleitungsstücke
 T 18 Rohrverbindungstücke
 X 1 Röntgenarbeiten
 R 13 Rückwärts-Reduktionsgetriebe, Ölbetrieben
 H 2 Rudermelder
 C 24 Schaltpulte (elektrische)
 S 32 Schalttafeln, Schaltschränke
 S 33 Schalttafeln (Schaltschränke) und Schaltanlagen
 F 9 Scheinwerfer
 S 6 Schiffanlagentechnik
 S 3 Schiffsbauer und Instandsetzungsbetriebe
 S 4 Schiffsmaschinen
 S 7 Schiffsmessinggiesserei
 M 4 Schiffsradar
 T 20 Schlepper
 S 5 Schlingerdämpfungsanlagen
 P 16 Schrauben, Schiffs-
 W 6 Schweißen, elektrisch, Argon-Lichtbogen- oder Gas-
 S 8 Siganlisieranlagen und -Apparate
 S 26 Spannungsentlastung
 F 2 Speisewasservorwärmer
 S 16 Stabilisierungsanlagen
 S 17 Stabilisierungsanlagen für Feuerleitung
 R 18 Stabilisierungsflossen
 S 24 Stahl, Mangan-, widerstandsfähig gegen Abnutzung
 S 21 Stahl- und Speziallegierungen
 S 23 Stahl, Werkzeuge aus Schnellreh-
 S 22 Stahlschmiedestücke, -platten und -teile, Pressstücke
 R 16 Stangen und Rohre, Hartguss-
 R 17 Stangen und Rohre, Strangguss-
 R 8 Staustrahlmaschinen
 S 11 Steckdosen und Stecker, elektrische, wasserdicht
 S 12 Steckdosen und Stecker, mehrpolige Typen
 P 12 Stecker und Steckdosen

P 12 Stecker und Steckdosen
 C 25 Steuer- (Regelungs-) Anlagen
 S 25 Steuergeräte
 R 19 Steuerruder
 N 4 Suchboote für Nichtmagnetminen
 T 3 Tanks, Öl- und Wasservorrats-
 T 1 Tankschiffe
 T 2 Tankschiffe (klein)
 D 8 Tauchausrüstung
 T 4 Technische Veröffentlichungen
 P 1 Teile für Dieselmotoren
 T 6 Telegraphenanlagen
 T 7 Telemotoren
 T 8 Telephone, batterieelose
 T 9 Telephone, Lautsprecher-
 T 11 Testgeräte für Feuerleitungsanlagen
 T 12 Torpedobootbauer
 T 15 Torpedos und Torpedorohre
 T 14 Torpedo-Seitenabschussvorrichtungen
 T 13 Torpedosteuerungs und -abweichungskontrolle
 H 7 Tragflächenboote
 E 13 Triebwerke, Flugzeug-
 D 12 Trockendockinhaber
 D 11 Trockenfrachter
 T 23 Turbinen
 T 24 Turbinen, Auspuff-
 T 26 Turbinen, Schiffs-Dampf-
 T 25 Turbinen, Schiffs-Gas-
 T 22 Turbinenvibration, Warngeräte für
 T 21 Turbinenvorgelege
 S 31 Überhitzer
 A 9 U-Bootabwehrboote
 A 11 U-Bootabwehrraketen
 A 10 U-Bootabwehr-Raketenabschussvorrichtungen
 S 27 U-Boot-Feuerleitung
 S 28 U-Boot-Periskope
 R 15 Umkehrgetriebe
 R 14 Umkehrmotoren, dampf- und luftbetrieben
 S 29 Unterseeboote
 S 30 Untereeeboote (herkömmlich)
 U 1 Unterwasserfernsehergeräte
 V 4 Ventilatoren und Luftkanäle
 V 3 Ventile, automatische Platten- und Teller-
 V 1 Ventile und Absperrvorrichtungen
 V 2 Ventile und Absperrvorrichtungen, hydraulische
 C 18 Verdichter
 C 22 Verflüssiger
 C 21 Verflüssigerrohre
 F 18 Verleger
 V 6 Vibration, Warngeräte für
 V 5 Vibrationsgeneratoren
 O 4 Waffen
 W 3 Wasserröhrenkessel
 A 6 Wechselstromerzeuger
 W 7 Winden
 S 2 Wissenschaftliche Instrumente
 C 15 Zentralisierte und automatische Steuerung
 D 3 Zerstörer

CLASSIFIED LIST OF ADVERTISERS—*continued*

C14. CASTINGS, STEEL

AB Bofors
Vickers Limited

C15. CENTRALISED AND AUTOMATIC CONTROL

Babcock & Wilcox (Operations) Ltd.
Brown Limited, S. G.
Hawthorn Leslie (Engineers) Ltd.
Kockums Mekaniska Verkstads AB
Vosper Thornycroft Group, The

C16. COASTAL AND INSHORE MINESWEEPERS

Amsterdam Shipyard Ltd.
Boatservice Ltd. A/S
Brooke Marine Ltd.
Gloster Saro Ltd.
Netherlands United Shipbuilding Bureau
Vosper Thornycroft Group, The
Yarrow & Co. Ltd.

C17. COMPRESSED AIR STARTERS FOR GAS TURBINES AND DIESEL ENGINES

Williams and James (Engineers) Ltd.

C18. COMPRESSORS

V/O "Sudoimport"
Williams and James (Engineers) Ltd.

C19. COMPUTER SERVICES

Marconi Co. Ltd., The

C20. COMPUTERS

Ferranti Limited
General Precision Inc.—Librascope Group
Hawker Siddeley Group
Marconi Co. Ltd., The
Sperry Rand Corporation
Yarrow & Co. Ltd.

C21. CONDENSER TUBES

Vickers Limited

C22. CONDENSERS

Hawthorn Leslie (Engineers) Ltd.
Vickers Limited

C23. CONTAINER SHIPS

Harland and Wolff Limited
Hawthorn Leslie (Shipbuilders) Ltd.
Fr. Lürssen Werft

C24. CONTROL DESKS (ELECTRIC)

Harland and Wolff Limited
Laurence Scott & Electromotors Ltd.
McGeoch & Co. (Birmingham) Ltd., William
Plessey Co. Ltd., The
Vosper Thornycroft Group, The

C25. CONTROL GEAR

Laurence Scott & Electromotors Ltd.
Vosper Thornycroft Group, The

C26. CORVETTES

Ateliers et Chantiers de Bretagne
Brooke Marine Ltd.
Harland and Wolff Limited
Hawthorn Leslie (Shipbuilders) Ltd.
Fr. Lürssen Werft
Netherlands United Shipbuilding Bureau
Vosper Thornycroft Group, The

C27. CRANES, SHIPS'

Hawker Siddeley Group

C28. CRANES, SHORE

Babcock & Wilcox (Operations) Ltd.

C29. CRUISERS

Cantiere Rodriquez
Harland and Wolff Limited
Hawthorn Leslie (Shipbuilders) Ltd.
Netherlands United Shipbuilding Bureau
Vickers Limited

D1. DECK MACHINERY

Hawker Siddeley Group
MacTaggart, Scott & Co. Ltd.
V/O "Sudoimport"
Vickers Limited

D2. DE-SUPERHEATERS

Babcock & Wilcox (Operations) Ltd.

D3. DESTROYERS

Ateliers et Chantiers de Bretagne
G.E.N.E.M.A.
Harland and Wolff Limited
Hawthorn Leslie (Shipbuilders) Ltd.
Kockums Mekaniska Verkstads AB
Netherlands United Shipbuilding Bureau
Vickers Limited
Vosper Thornycroft Group, The
Yarrow & Co. Ltd.

D4. DIESEL ENGINES, AUXILIARY

Coventry Climax Engines Ltd.
Hawker Siddeley Group
Kockums Mekaniska Verkstads AB
Korody-Colyer Corporation
Korody Marine Corporation
Maybach Mercedes-Benz Motorenbau GmbH
Netherlands United Shipbuilding Bureau
V/O "Sudoimport"

D5. DIESEL ENGINES, MAIN PROPULSION

Harland and Wolff Limited
Hawker Siddeley Group
Hawthorn Leslie (Engineers) Ltd.
Kockums Mekaniska Verkstads AB
Korody-Colyer Corporation
Korody Marine Corporation
Maybach Mercedes-Benz Motorenbau GmbH
Netherlands United Shipbuilding Bureau
Napier & Son Ltd., D.
V/O "Sudoimport"
Vickers Limited

D6. DIESEL ENGINES SPARE PARTS

Diesel Parts and Equipment Co.
Harland and Wolff Limited
Hawker Siddeley Group
Hawthorn Leslie (Engineers) Ltd.
Kockums Mekaniska Verkstads AB
Korody-Colyer Corporation
Korody Marine Corporation
Maybach Mercedes-Benz Motorenbau GmbH

D7. DIESEL FUEL INJECTION EQUIPMENT

Diesel Parts and Equipment Co.
Kockums Mekaniska Verkstads AB
Korody-Colyer Corporation
Korody Marine Corporation

D8. DIVING EQUIPMENT

Korody Marine Corporation

D9. DOCK GATES

Harland and Wolff Limited
Vickers Limited
Vosper Thornycroft Group, The

D10. DREDGERS

Ateliers et Chantiers de Bretagne

D11. DRY CARGO VESSELS

Boatservice Ltd. A/S
Brooke Marine Ltd.
Harland and Wolff Limited
Hawthorn Leslie (Shipbuilders) Ltd.
Kockums Mekaniska Verkstads AB
Fr. Lürssen Werft
V/O "Sudoimport"
Vickers Limited

CLASSIFIED LIST OF ADVERTISERS—continued

D12. DRY DOCK PROPRIETORS

Hawthorn Leslie (Shipbuilders) Ltd.
Kockums Mekaniska Verkstads AB
Vickers Limited

E1. ECONOMISERS

Babcock & Wilcox (Operations) Ltd.
Hawthorn Leslie (Engineers) Ltd.
Netherlands United Shipbuilding
Bureau

E2. ELECTRIC CABLES

V/O "Sudoimport"

E3. ELECTRICAL AUXILIARIES

Hawker Siddeley Group
Laurence Scott, & Electromotors Ltd.

E4. ELECTRICAL EQUIPMENT

Harland and Wolff Limited
Hawker Siddeley Group
McGeoch & Co. (Birmingham) Ltd.
William
Plessey Co. Ltd., The
V/O "Sudoimport"
Vosper Thornycroft Group, The

E5. ELECTRICAL FITTINGS

McGeoch & Co. (Birmingham) Ltd.,
William

E6. ELECTRICAL INSTALLATIONS AND REPAIRS

Hawker Siddeley Group
Harland and Wolff Limited
Vosper Thornycroft Group, The

E7. ELECTRICAL SWITCHGEAR

Hawker Siddeley Group
Laurence, Scott & Electromotors Ltd.
McGeoch & Co. (Birmingham) Ltd.
William
V/O "Sudoimport"
Whipp & Bourne Ltd.

E8. ELECTRO-HYDRAULIC AUXILIARIES

H.M.L. (Engineering) Ltd
MacTaggart, Scott & Co. Ltd.
Sperry Gyroscope Co. Ltd.
Vosper Thornycroft Group, The

E9. ELECTRONIC EQUIPMENT

Barr & Stroud Ltd.
British Hovercraft Corporation Ltd.
Edo Corporation
Ferranti Limited
General Precision Inc.—Librascope
Group
Korody Marine Corporation
Marconi Co. Ltd., The
Plessey Co. Ltd., The
Sippican Corporation, The
Sperry Gyroscope Co. Ltd.
Sperry Rand Corporation
Vosper Thornycroft Group, The

E10. ENGINE MONITORS AND DATA LOGGERS

Sperry Gyroscope Co. Ltd.
Vosper Thornycroft Group, The

E11. ENGINE PARTS, DIESEL

Diesel Parts and Equipment Co.
Harland and Wolff Limited
Hawker Siddeley Group
Hawthorn Leslie (Engineers) Ltd.
Kockums Mekaniska Verkstads AB
Korody-Colyer Corporation
Korody Marine Corporation
Maybach Mercedes-Benz Motorenbau
GmbH

E12. ENGINE SPEED CONTROLS

Vosper Thornycroft Group, The

E13. ENGINES, AIRCRAFT

Rolls-Royce Ltd.

E14. ENGINES, DIESEL

Ateliers et Chantiers de Bretagne
Coventry Climax Engines Ltd.
English Electric Co., Ltd.
Fiat
Harland and Wolff Limited
Hawker Siddeley Group
Hawthorn Leslie (Engineers) Ltd.
Kockums Mekaniska Verkstads AB
Korody-Colyer Corporation
Korody Marine Corporation
Maybach Mercedes-Benz Motorenbau
GmbH
Mitsubishi Heavy Industries Ltd.
Napier & Son Ltd., D.
Netherlands United Shipbuilding
Bureau
V/O "Sudoimport"
Vickers Limited

E15. ENGINES, GAS TURBINE

Rolls-Royce Ltd.

E16. ENGINES, STEAM TURBINE

Harland and Wolff Limited
Hawthorn Leslie (Engineers) Ltd.
Kockums Mekaniska Verkstads AB
Netherlands United Shipbuilding
Bureau
Vickers Limited
Yarrow & Co. Ltd.

E17. EPICYCLIC GEARS

Vickers Limited

E18. ESCORT VESSELS

Ateliers et Chantiers de Bretagne
Brooke Marine Ltd.
Harland and Wolff Limited
Hawthorn Leslie (Shipbuilders Ltd.)
Netherlands United Shipbuilding
Bureau
Vickers Limited
Vosper Thornycroft Group, The
Yarrow & Co. Ltd.

F1. FAST PATROL BOATS

Amsterdam Shipyard Ltd.
Boatservice Ltd. A/S
Brooke Marine Ltd.
Cantiere Rodriquez
Hawthorn Leslie (Shipbuilders) Ltd.
Fr. Lürssen Werft
Korody Marine Corporation
Netherlands United Shipbuilding
Bureau
Vosper Thornycroft Group, The
Yarrow & Co., Ltd.

F2. FEED WATER HEATERS

Babcock & Wilcox (Operations) Ltd.
Vickers Limited

F3. FIBRE OPTICS

Barr & Stroud Ltd.
Ferranti Ltd.

F4. FIBREGLASS VESSELS AND OTHER PRODUCTS

Boatservice Ltd. A/S
Harland and Wolff Limited
Korody Marine Corporation
Netherlands United Shipbuilding
Bureau
Vosper Thornycroft Group, The

F5. FIRE AND SALVAGE VESSELS

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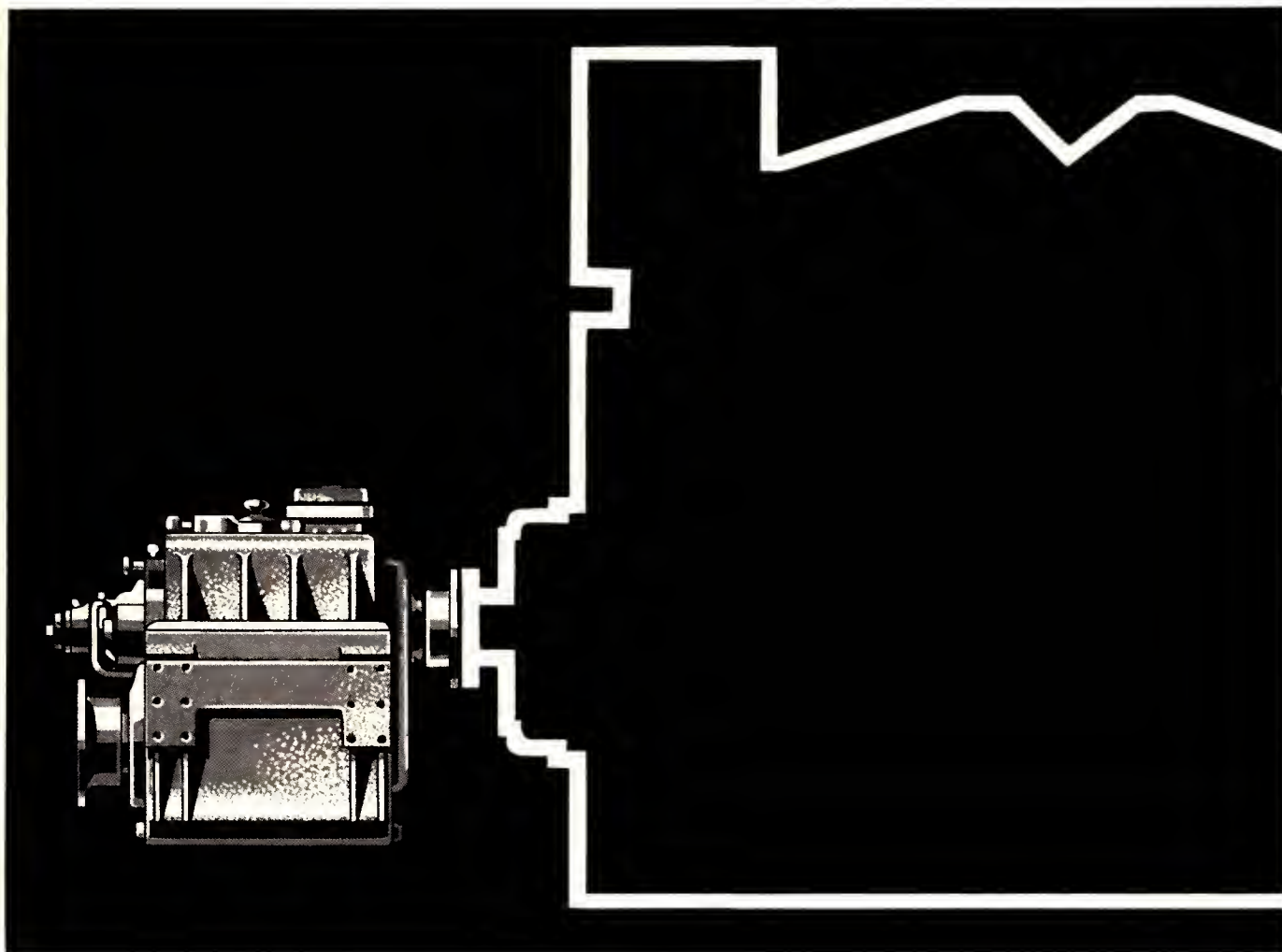
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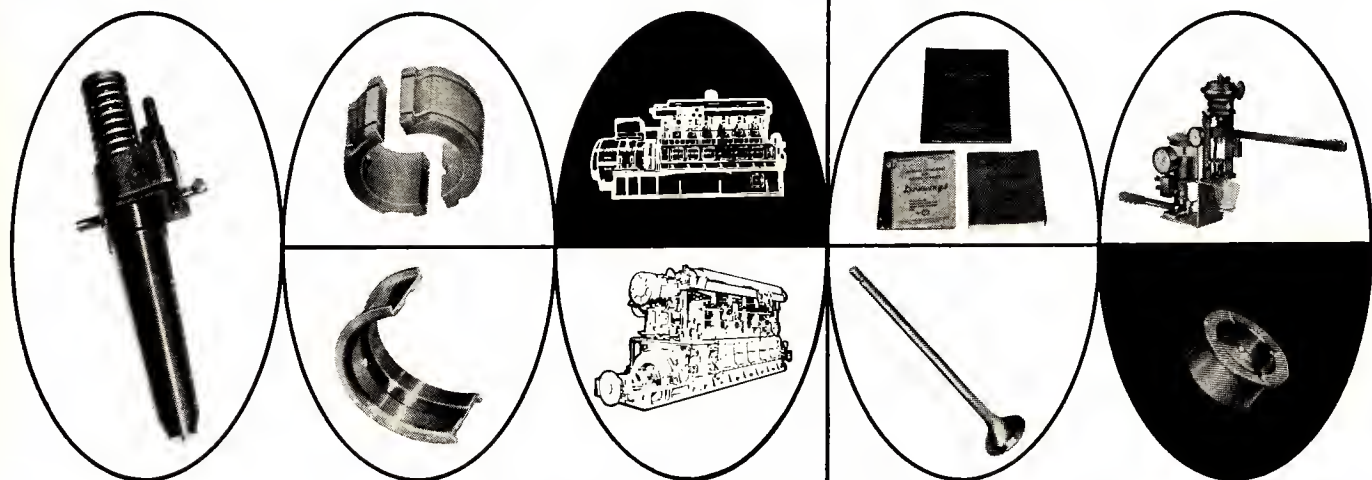
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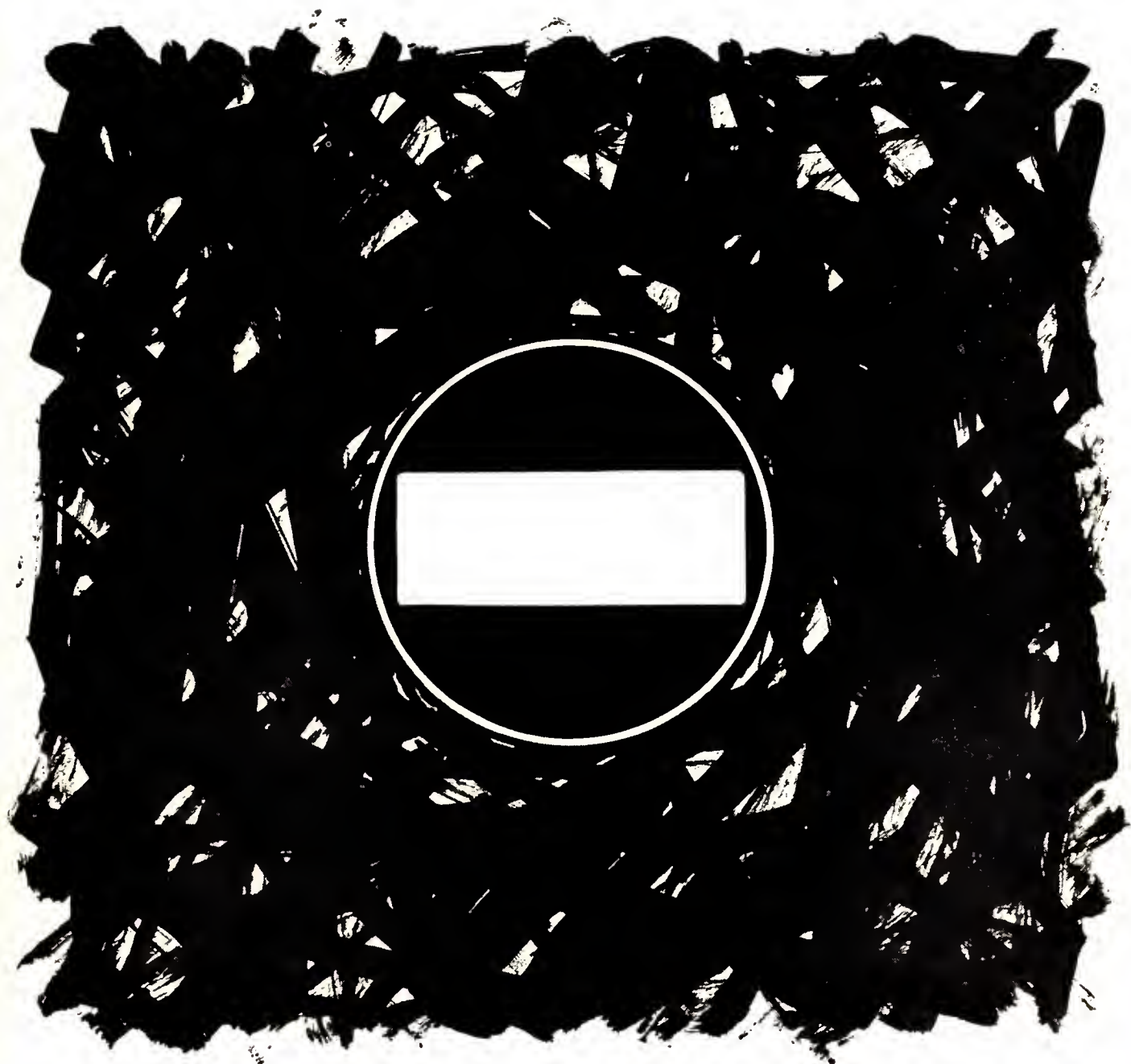
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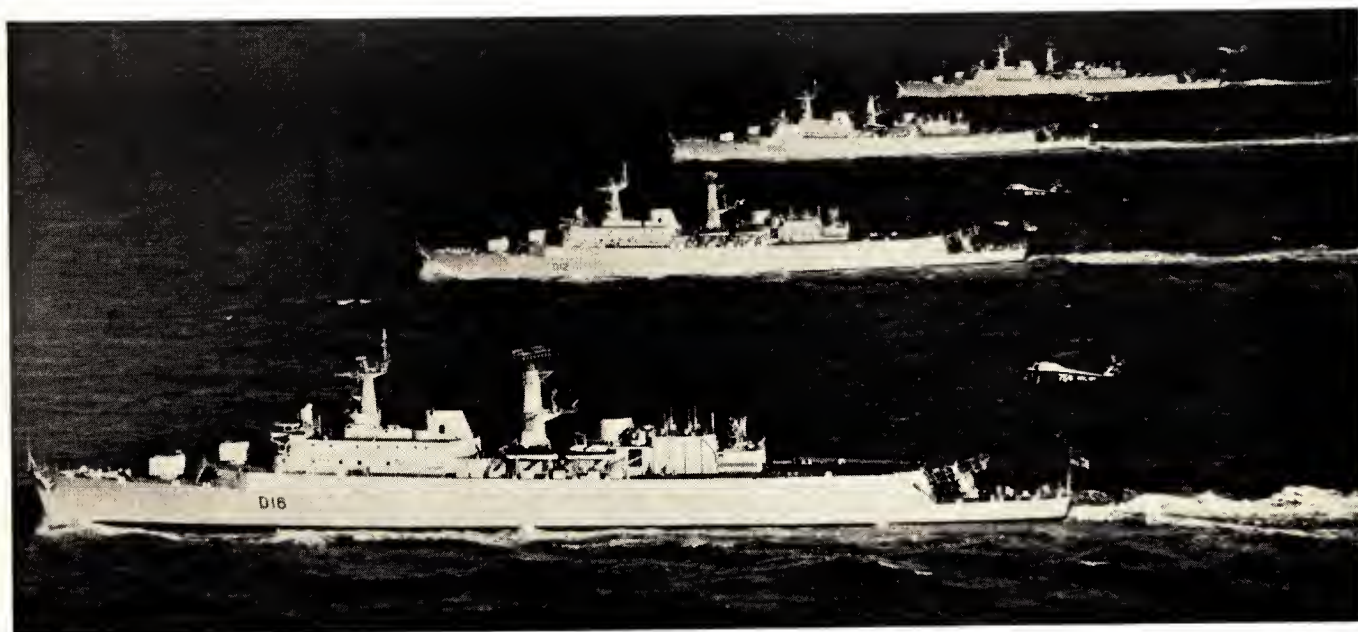
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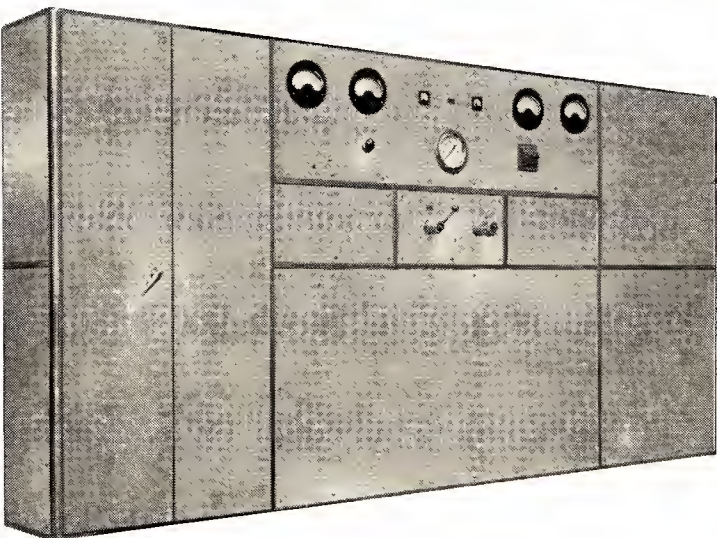
OUTLET CONSOLE

An HML hydraulic ring main system can be installed in a ship, aircraft hangar, laboratory, or workshop to provide a number of convenient sources of hydraulic power for purposes such as testing hydraulic systems and operating hydraulically driven machines. By using a ring main system instead of a number of self-contained power units, both noise and cost are reduced, and the working area is freed from cumbersome equipment: The power unit for the ring main can be isolated in a plant room, and the ring main outlet consoles are compact units which can be mounted at any convenient position. If required, small hydraulic convertor hand trolleys can be connected to the ring main.

Ring main systems are tailored to suit individual needs, a typical installation consisting of a power unit feeding between five and fifteen outlets consoles. The power unit consists of one or more electrically driven pumps, a cooler, filters, gauges, and the various valves, pressure

switches, etc., that control the system. Automatic control is widely used, so that the system can be started up or stopped simply by pressing a button.

The output from the power unit is at a constant pressure—usually between 3000 and 5000 psi—and reduced outlet pressures are obtained by means of controls at the outlet consoles. When more than one pump is employed, a flow regulating device automatically unloads the additional pumps when their output is not required; so that only when demand is approaching the maximum are all the pumps operating. This device can be used to switch off the electric motors that drive the inoperative pumps. In most ring main systems, safety devices are installed so that the system will automatically shut down in the event of excessive fluid temperature, clogging of a filter, lack of fluid in the header tank, or a pressure drop due to a serious leak. Each of the safety devices also








RING MAIN CONTROL PANEL

operates a warning lamp which shows the cause of the stoppage.

A typical outlet console consists of a wall mounted cabinet containing a pressure reducing valve for adjusting the output pressure, a needle valve for shutting off the output or regulating the flow for inching tests and the like, an adjustable back pressure valve, a pressure unloading valve, a filter with a differential pressure gauge, and two pressure gauges—one in the output line and one in the return line. Flexible hoses with self-sealing couplings are provided for connecting the console to a component or machine. Additional facilities that could be fitted if required include a flowmeter, d.c. terminals for use with solenoid operated components, a temperature gauge, and a changeover valve for supplying double-acting components. The pressure of the output from the console can be accurately controlled between zero and the system maximum; the maximum flow available depends on requirements, a typical figure being 8 g.p.m.

Other hydraulic components in the HML range:—

				
Automatic Gauge Isolating Valves: 20-60, 60-200, 200-600 and 600-2000 psi.	Pressure relief valve: 0-5000 psi, maximum flow 12 gpm.	Flow control valves: 0-4, 0-8 and 0-12 gpm, maximum pressure 5000 psi.	Reducing Valve: 5000 psi, maximum flow 12 gpm.	Stop and needle valves; 1/2, 3/4, 1 and 1 1/2 in NB, maximum pressure 5000 psi.

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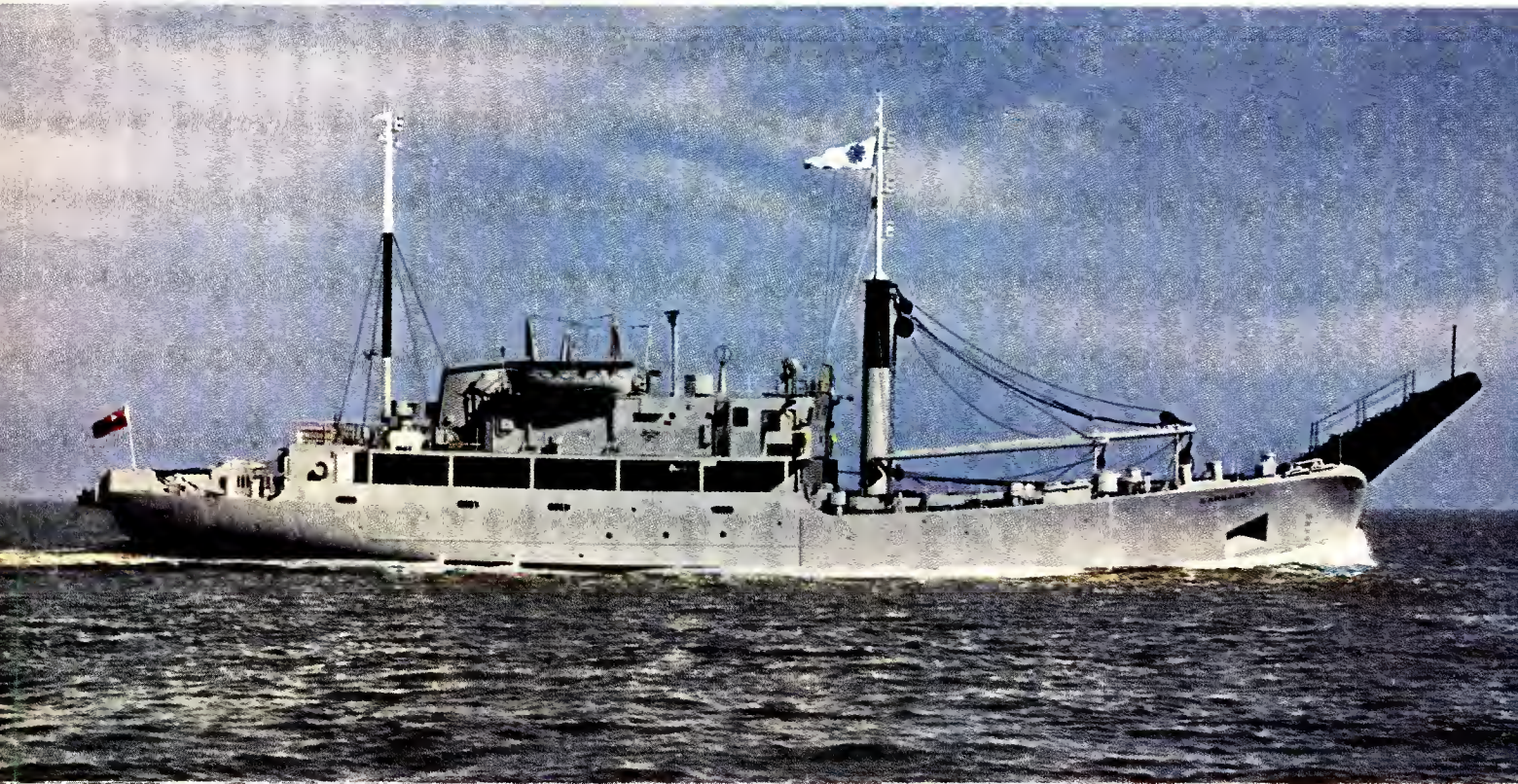


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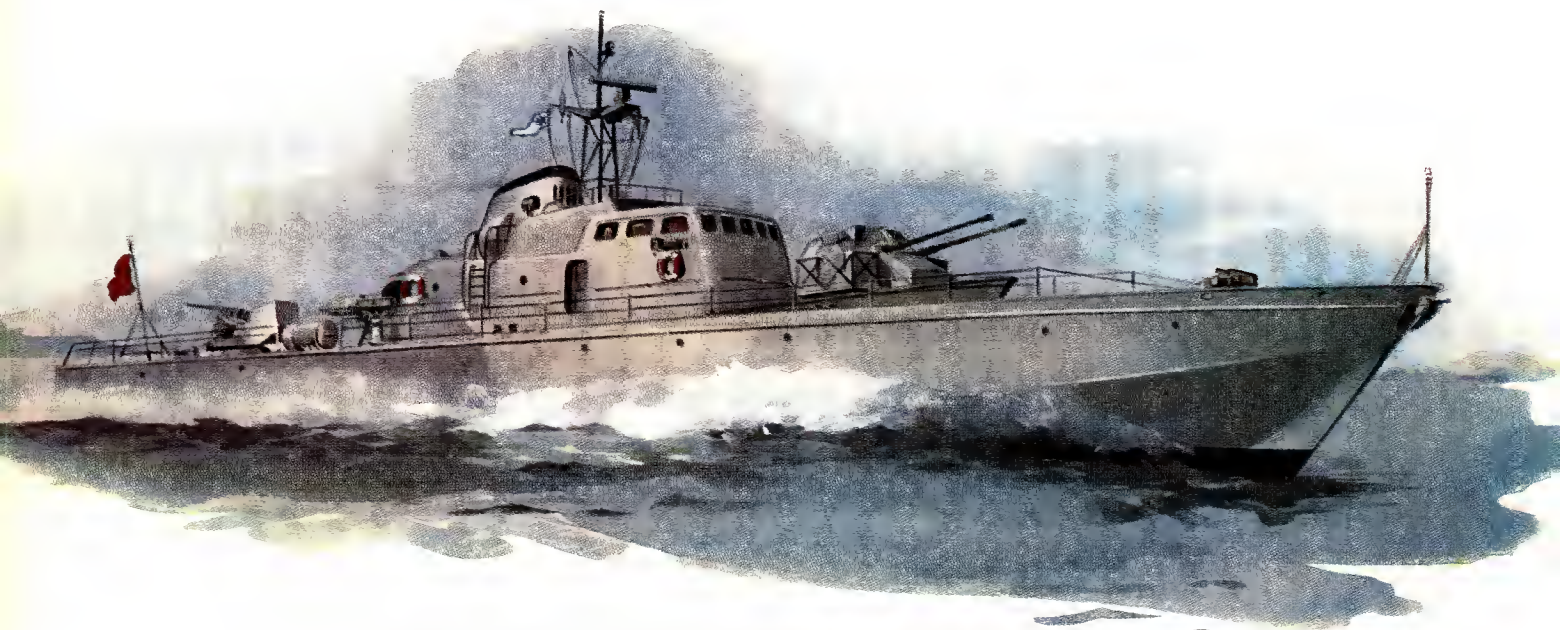
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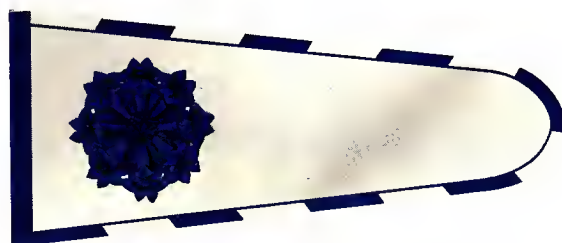
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LISTA CLASIFICADA DE ANUNCIANTES

El número de referencia de cada uno de los epígrafes abajo relacionados indica el equivalente epígrafe en inglés en las páginas 16 a 35

F8	Accesorios de buques	G15	Control centralizado y automático
F6	Accesorios de tuberías	M12	Constructores de modelos
E5	Accesorios eléctricos	G26	Corbetes
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S21	Aleaciones de acero y especiales	S32	Cuadros de distribución
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A6	Alternadores	D2	Desrecalentadores de vapor
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O4	Armamento y sus municiones	A15	Dirección automática
G14	Aparatos de puntería y buscadores en elevación para cañones	V6	Dispositivos de aviso de vibración
E7	Aparellaje eléctrico	T22	Dispositivos de aviso de vibración de turbinas
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G17	Arrancadores neumáticos para turbinas de gas y motores diesel	G16	Dragaminas costeros y de aguas esturiales
S7	Artículos de latón para buques	N4	Dragaminas (minas no magnéticas)
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B1	Binóculos	A8	Elevadores de municiones
F19	Bombas	S26	Eliminación de esfuerzos
F7	Bombas para servicio de incendio	A13	Embarcaciones de asalto
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H7	Botas hidroaerostáticas	F4	Embarcaciones y otros productos de fibra de vidrio
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G17	Brújulas giroscópicas	S11	Enchufes macho y hembra, herméticos
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B3	Buques de carga a granel	R15	Engranajes inversores
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D11	Buques de carga seca	R13	Engranajes reductores inversores, accionados por aceite
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F2	Buques de pasajeros	T13	Equipo de control de trayectoria y desviación de torpedos
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M11	Buques de proyectiles	E3	Equipo eléctrico auxiliar
G10	Buques de proyectiles teleguiados	S16	Equipo estabilizador
S1	Buques de salvamento y socorridos	S17	Equipo estabilizador para control de tiro
L5	Buques de transporte de gas (de petróleo) líquido	E8	Equipos auxiliares electro-hidráulicos
M9	Buques dragaminas	L7	Equipos de altavoces
M6	Buques mercantes	F6	Equipos de control de tiro y artillería
M8	Buques minadores	D8	Equipos de buceo
R12	Buques para investigaciones técnicas	H8	Equipos de estudios hidrográficos
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G2	Cabrestantes y molinetes	M5	Equipos de manejo de materiales
G3	Cajas para engranajes	O1	Equipos de perforación, industria petrolífera
B2	Calderas	T11	Equipos de pruebas para sistemas de control de tiro
W3	Calderas de tubos de agua	B6	Equipos de radio
F2	Calentadores de agua de alimentación	X1	Equipos de rayos X
N1	Cañones navales	G9	Equipos de servicio de proyectiles teleguiados
G13	Cañones y montajes	U1	Equipos de televisión submarina
F10	Carretes de horquilla elevadora	G4	Equipos para manejo de carga
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I4	Componentes de instrumentos (mecánicos)	E9	Equipos electrónicos
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A1	Compresores de aire	M7	Equipos microfónicos
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D9	Compuertas de dique	R5	Equipos de radio a bordo de aviones
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G22	Condensadores	S5	Estabilizadores de buques
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		F12	Fragatas
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		V5	Generadores de vibraciones

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S19	Generadores nucleares de vapor	L1	Portalámparas
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G28	Grúas de muelle	G11	Proyectiles teleguiados
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H3	Hovercraft (autodeslizadores)	R4	Radar de navegación y aviso de interceptación
H2	Indicadores de ángulo de timón	M4	Radar marino
S10	Indicadores de humo	N2	Radar naval
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N5	Instalaciones nucleares	G7	Reguladores
E6	Instalaciones y reparaciones eléctricas	G8	Reguladores de velocidad del motor
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I7	Instrumentos de precisión	W1	Reparación de buques de guerra
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I6	Instrumentos náuticos	D6 y R11	Repuestos para motores diesel
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L4	Lámparas y alumbrado	W4	Sistemas de armamento
A9	Lanchas antisubmarinas	M10	Sistemas de control de proyectiles
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S4	Maquinaria para buques	T3	Tanques almacenamiento petróleo y agua
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P15	Materias y combustibles de propulsión y aire comprimido	T8	Teléfonos sin batería
S25	Mecanismos de dirección	R10	Telemandos
M13	Mecanismos de gobierno de máquinas	R9	Telémetros
G25	Mecanismos de mando	L3	Telémetros de laser
H5	Máquinas hidráulicas	T7	Telemotores
G7	Monitores de los espacios de carga	R19	Timones
E13	Motores de aviación	T15	Torpedos y tubos lanzatorpedos
E14	Motores diesel	G3	Transbordadores de vehículos
D4	Motores diesel auxiliares	R7	Transmisores y receptores de radio
D5	Motores diesel de propulsión principal	T19	Tubos
M16	Motores eléctricos	P10	Tubos de acero, soldados o sin costura
E15	Motores de turbina de gases	G21	Tubos de condensador
E16	Motores de turbina de vapor	P8	Tubos de cobre y latón
E10	Monitores y registradores de datos de motores	P7	Tubos de hierro colado
A7	Municiones	P9	Tubos para agua de mar
P5	Periscopios	T23	Turbinas
S28	Periscopios para submarinos	G2	Turbinas de gases
T17	Pesqueros	T24	Turbinas de gases de exhaustación
T2	Petroleros (pequeños)	S20	Turbinas de vapor
S22	Piezas de acero forjado, placas y perfiles, y piezas estampadas	T25	Turbinas marinas de gases
G14	Piezas de fundición de acero	T26	Turbinas marinas de vapor
G12	Piezas de fundición de hierro de grafito esferoidal	V3	Válvulas automáticas de placa o disco
G13	Piezas de fundición de hierro de grafito esferoidal "Ni-Resist"	V1	Válvulas y grifos
E11	Piezas de motores diesel	V2	Válvulas y grifos hidráulicos
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G11	Piezas fundidas de moldeo en cáscara	A5	Vehículos de cojín de aire
G9	Piezas fundidas de hierro de alta características	V4	Ventiladores y conductos de aire
M1	Piezas maquinadas, ferrosas	Y1	Yates (de motor)
M2	Piezas maquinadas, no ferrosas		
P1	Piezas para motores diesel		
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A12	Planchas de blindaje		
F11	Planta destiladora de agua dulce		
P13	Pontones autopropulsados		

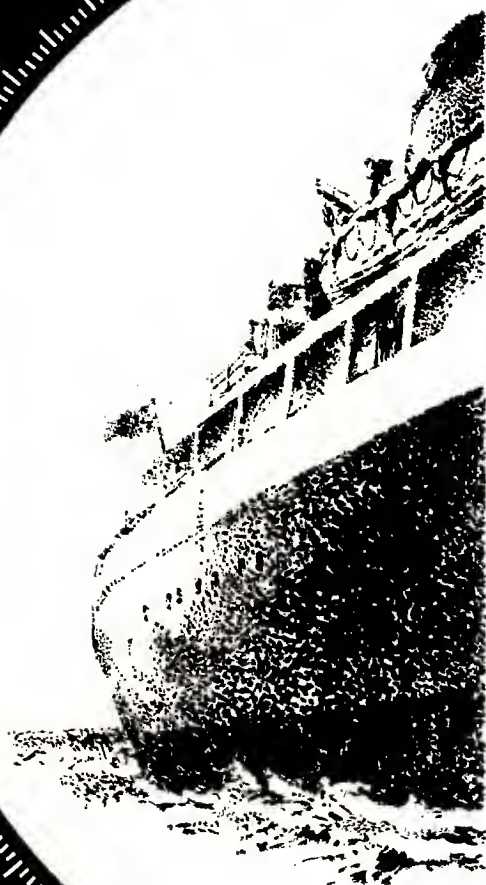
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A 4	Авиационные приборы	P 18	Изательства
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A 7	Боеприпасы	S 32	Коммутационные щиты
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F 1	Быстроходные патрульные суда	M 4	Корабельная радиолокация
V 4	Вентиляторы и коробки для воздуха	N 2	Корабельная радиолокация
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H 6	Гидравлическое оборудование	M 9	Минные тральщики
R 12	Гидрографические суда	C 16	Минные тральщики, кабестаны и речные
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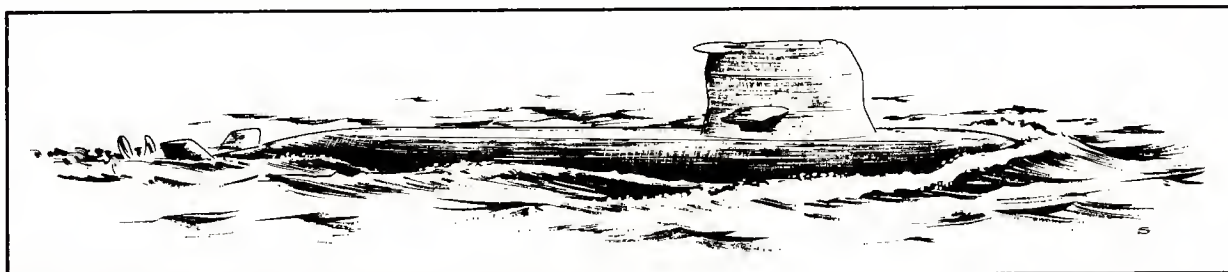
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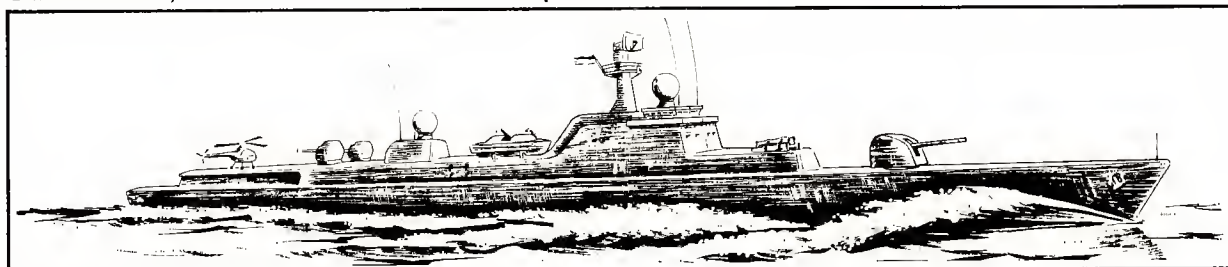
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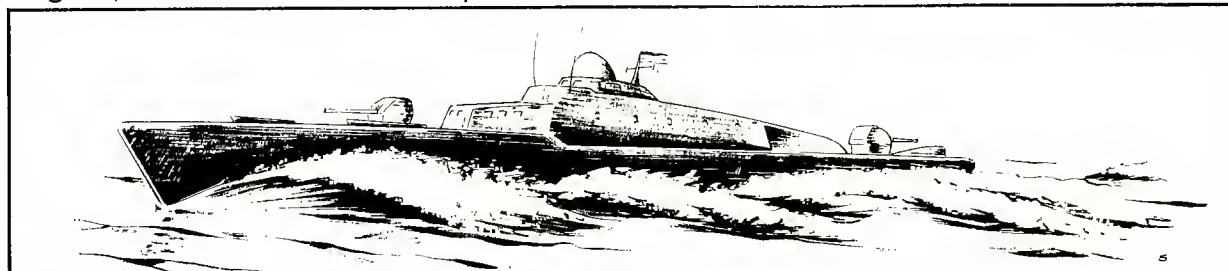
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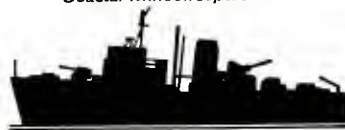
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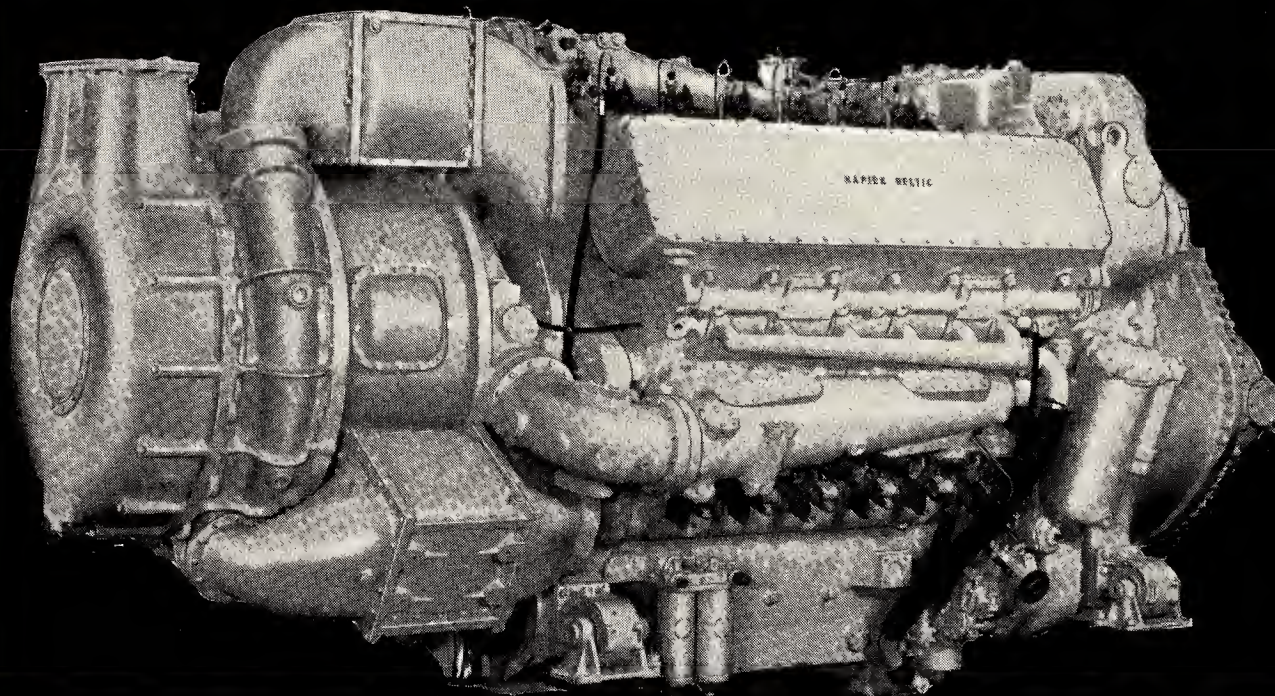
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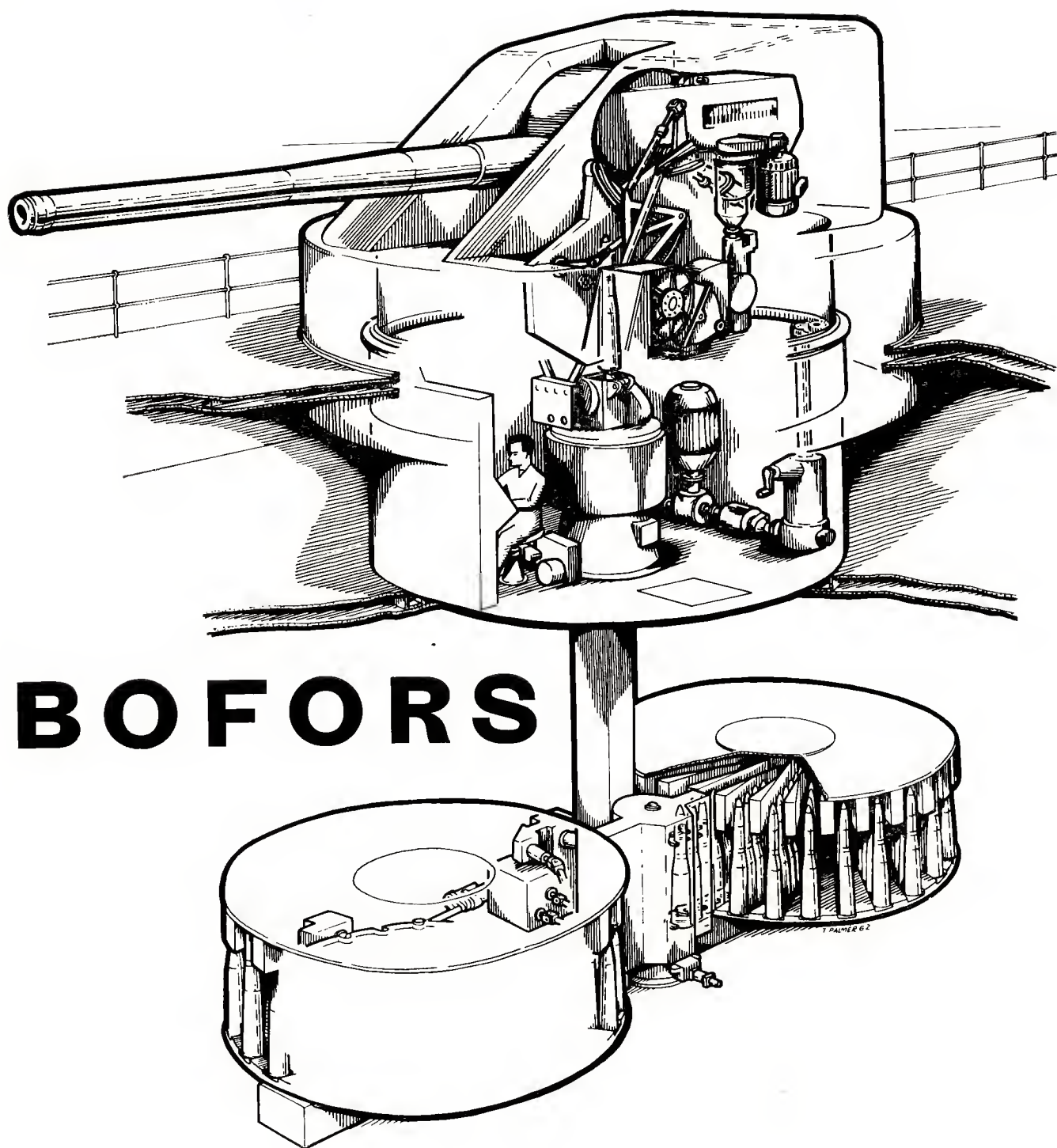
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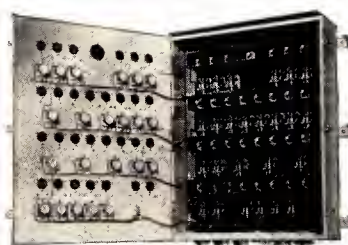
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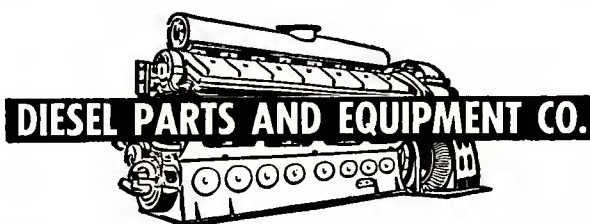
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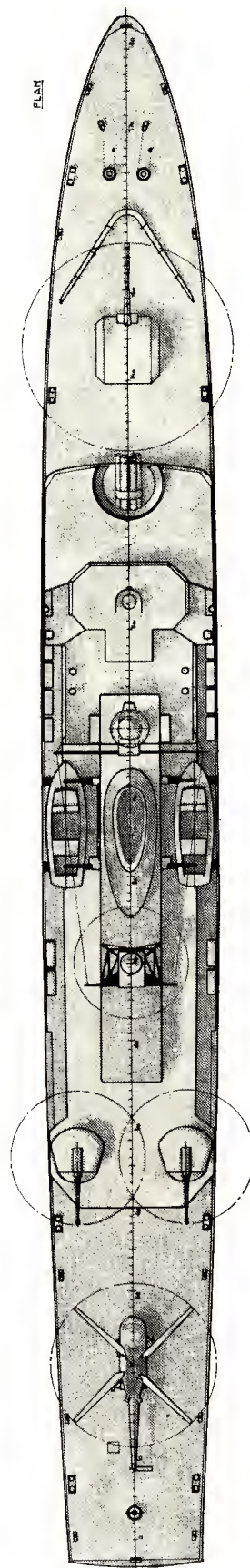
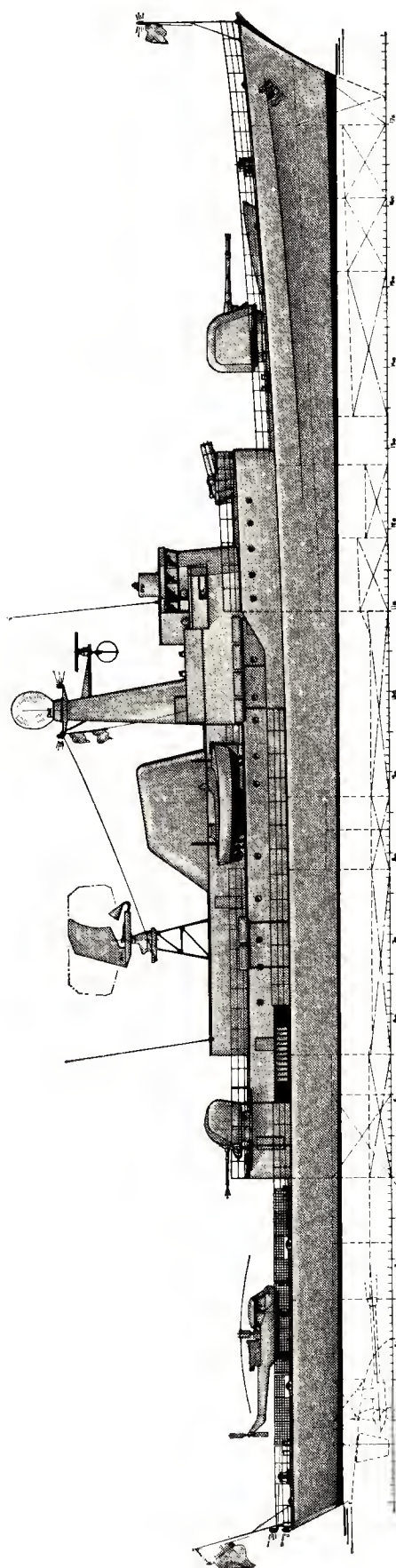
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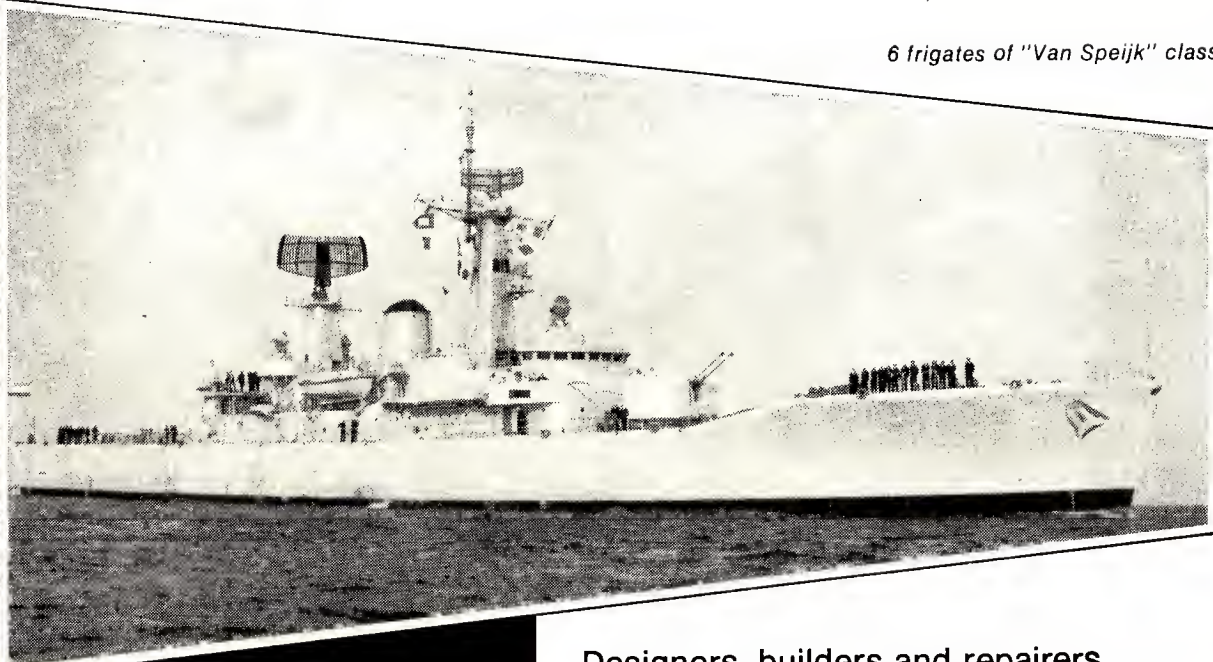
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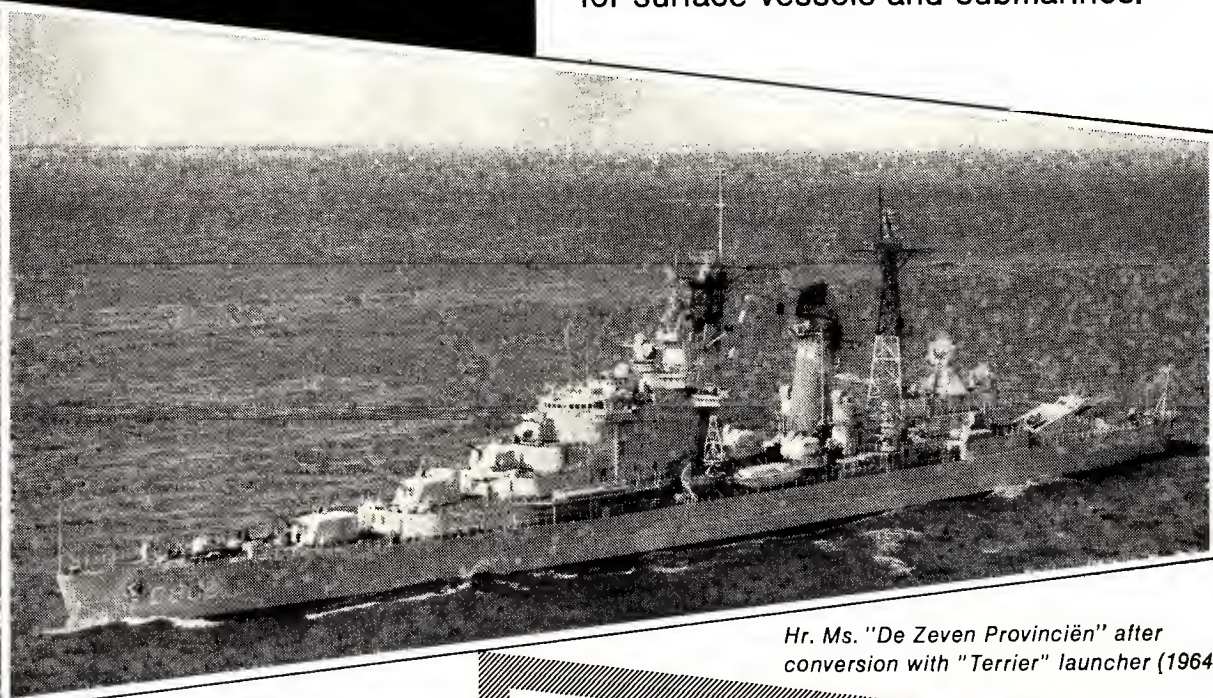
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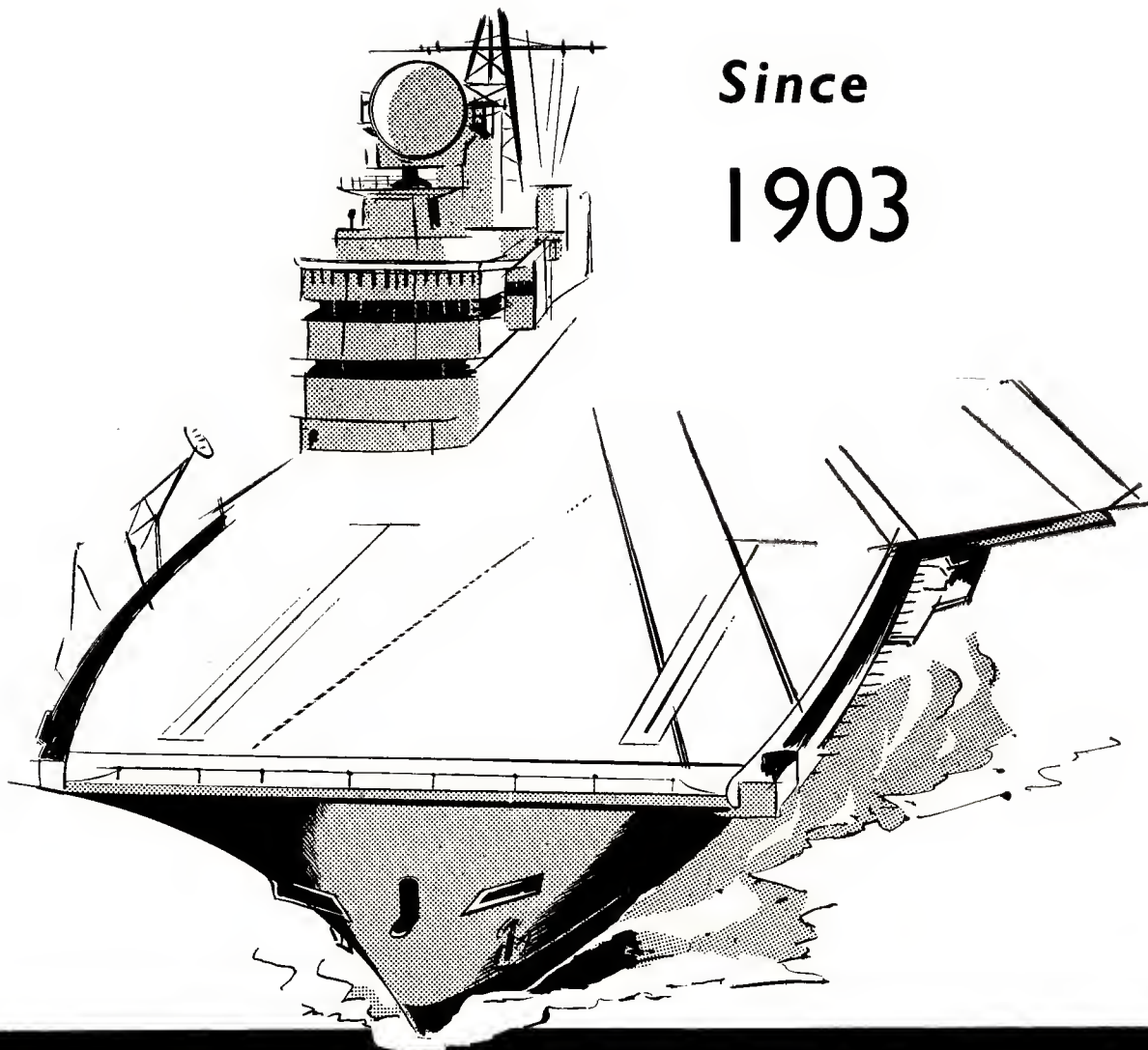


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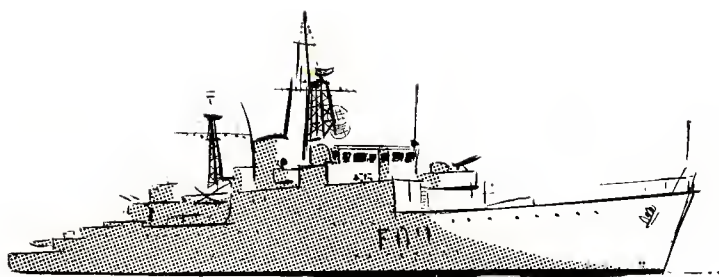
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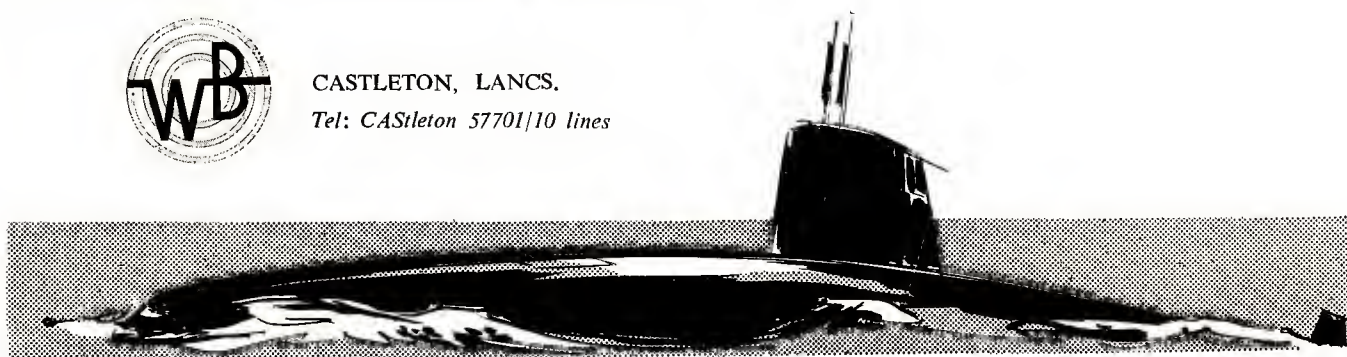
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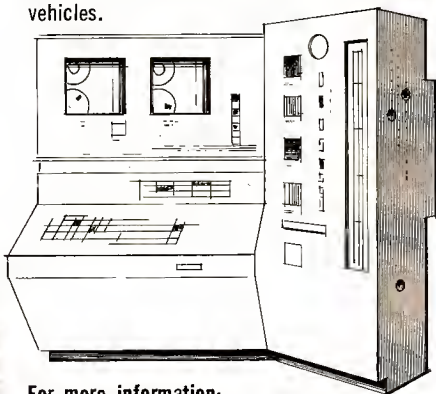
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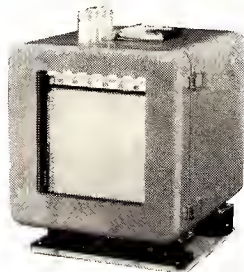
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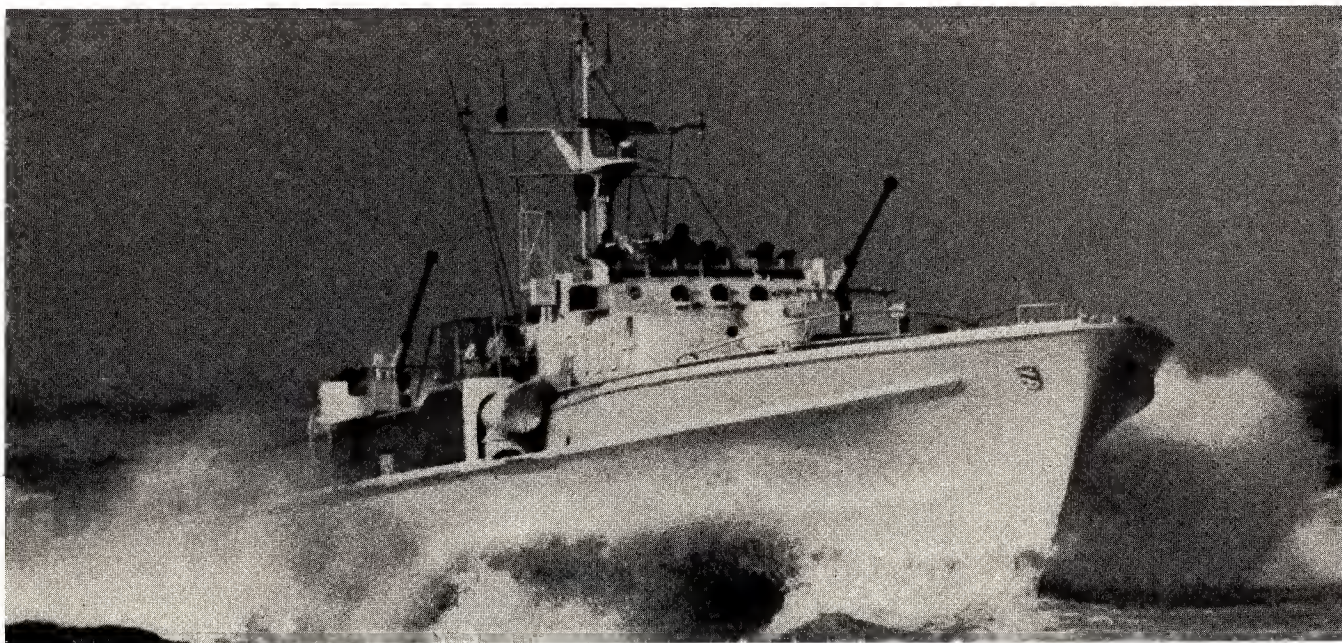


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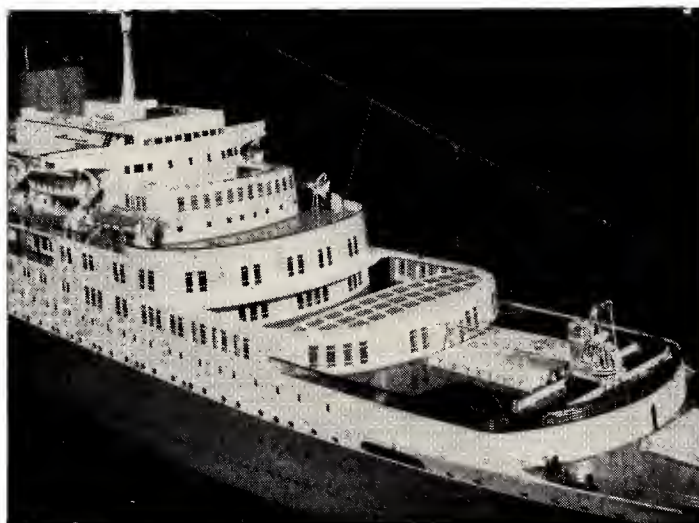
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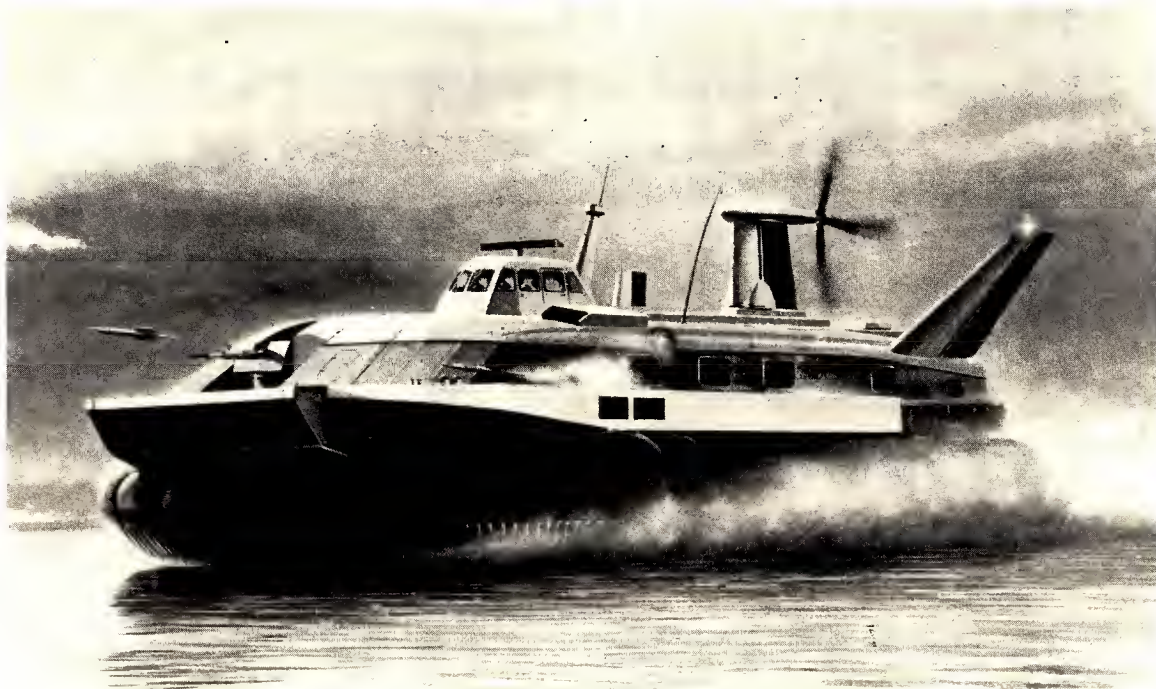
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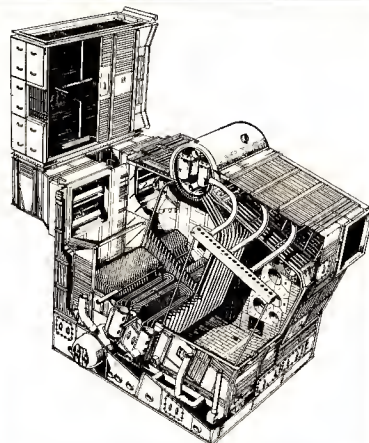
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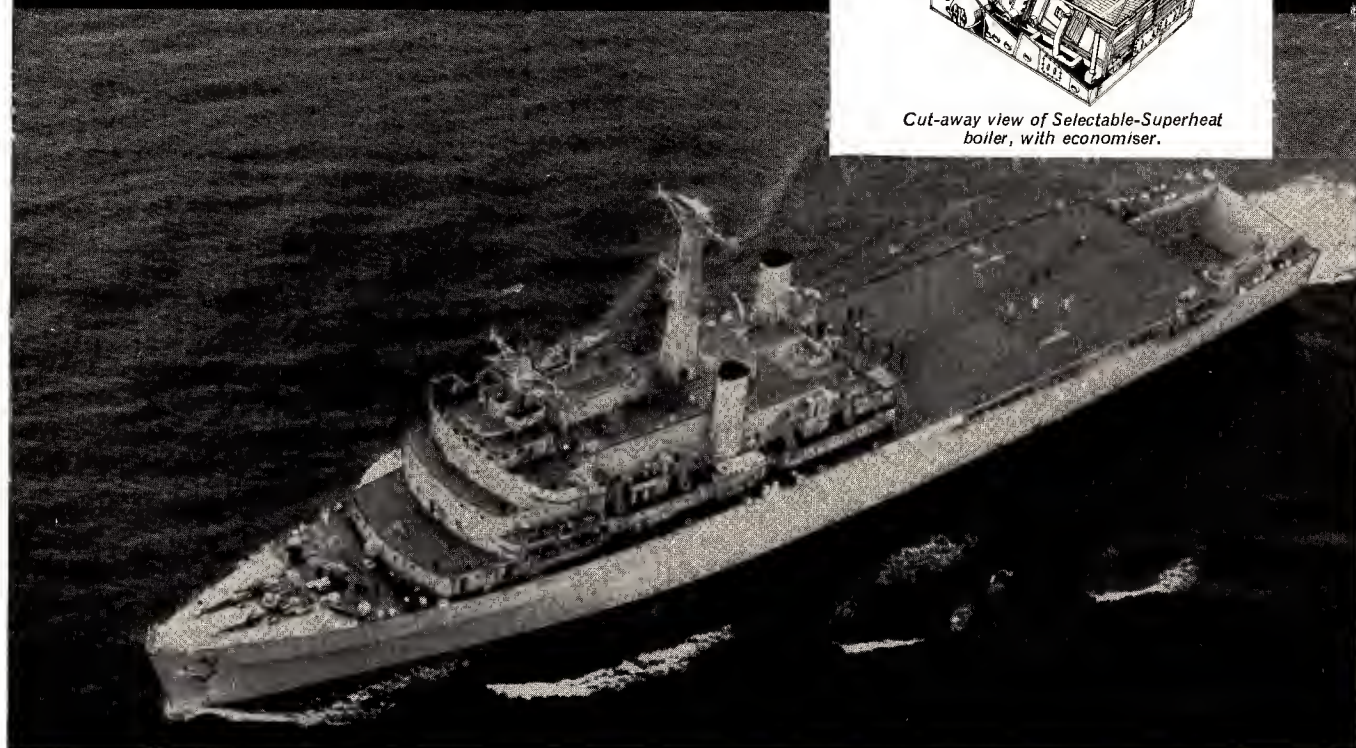
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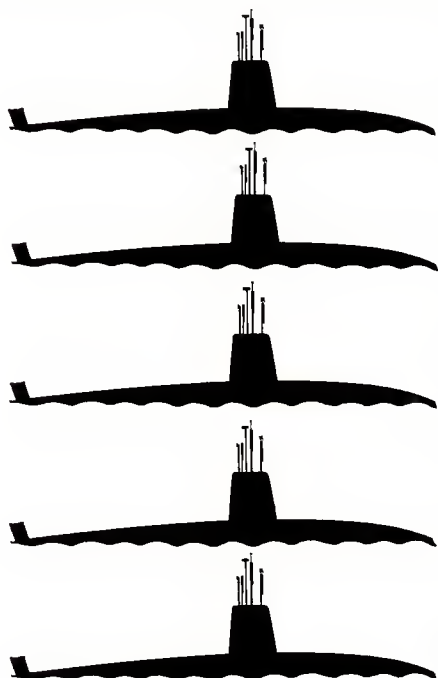
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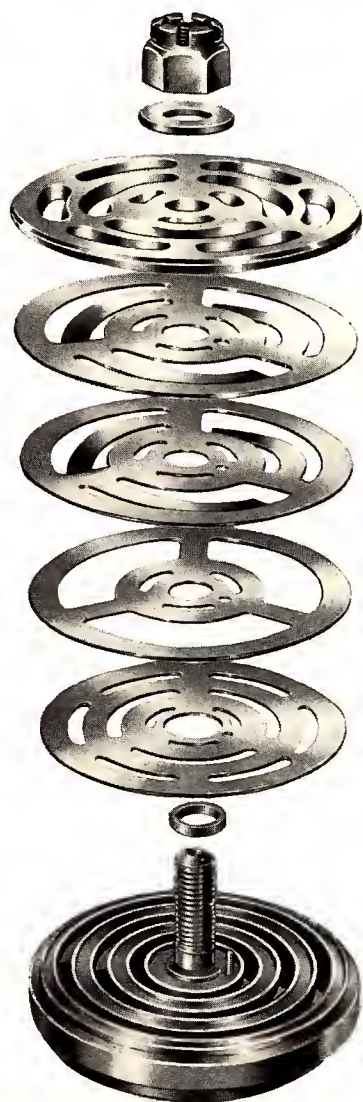
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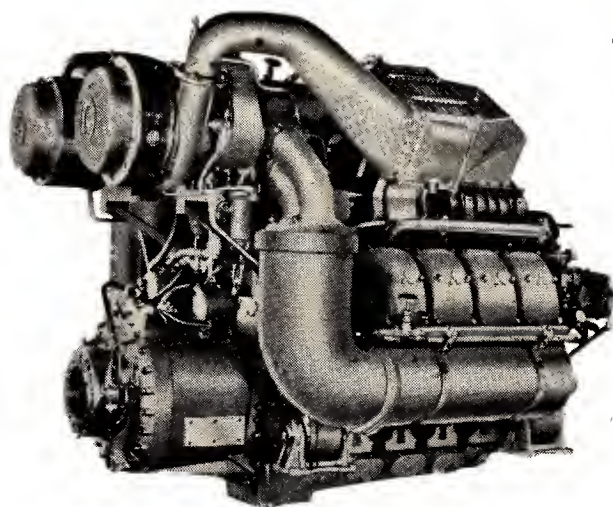
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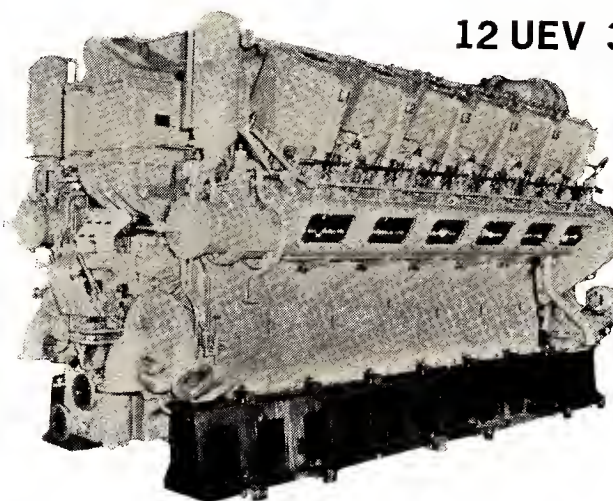
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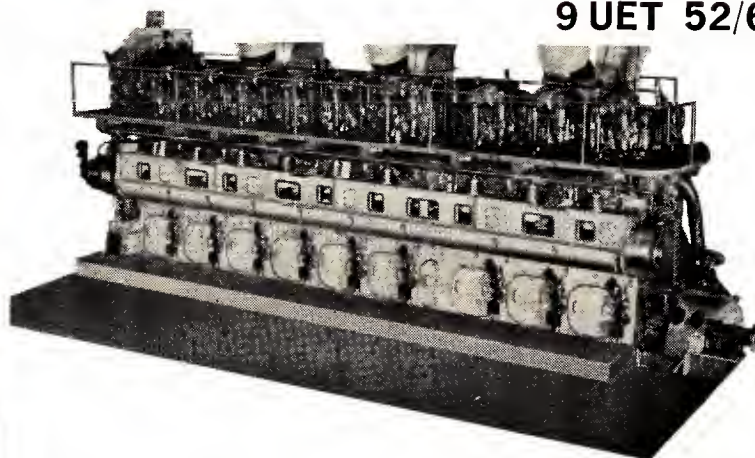
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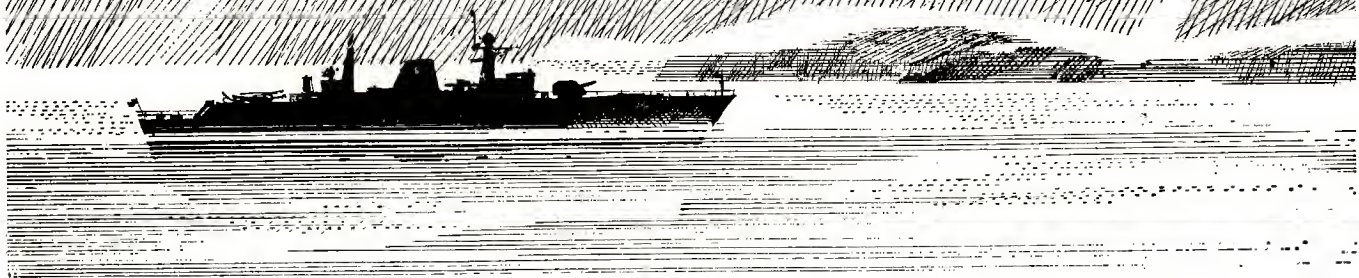
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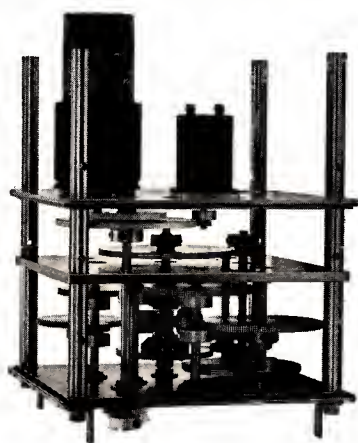
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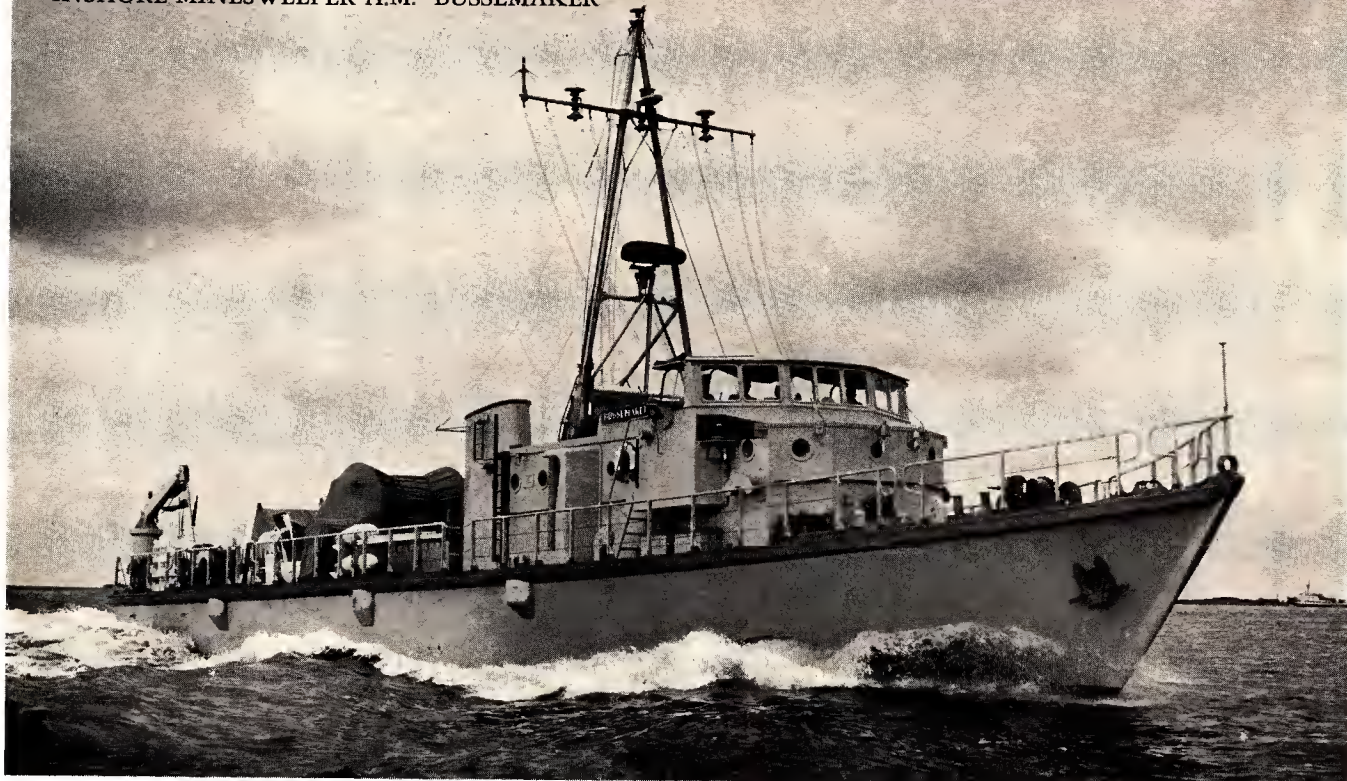
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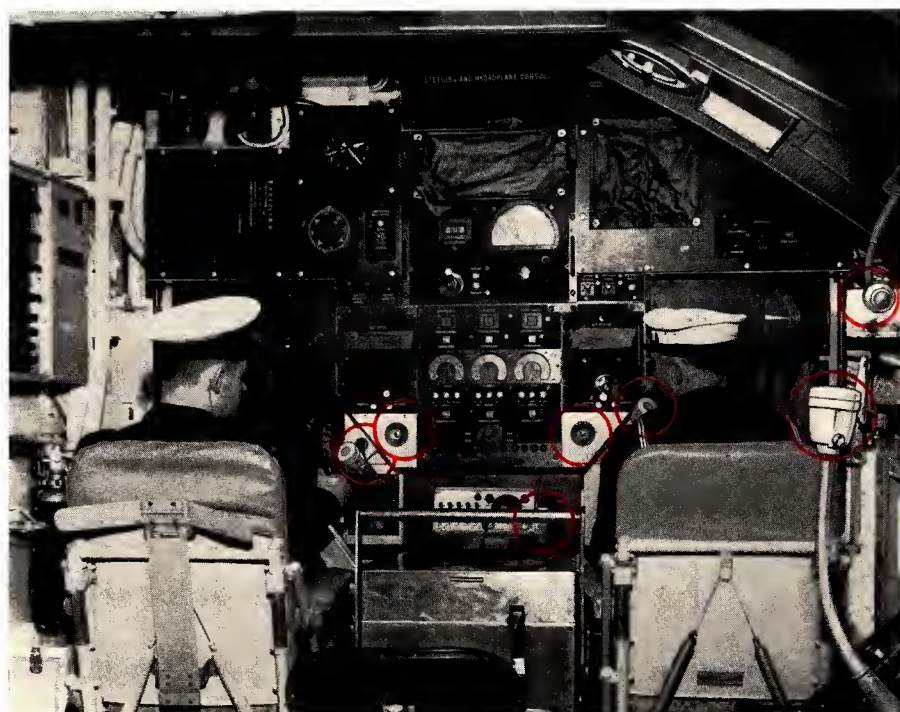
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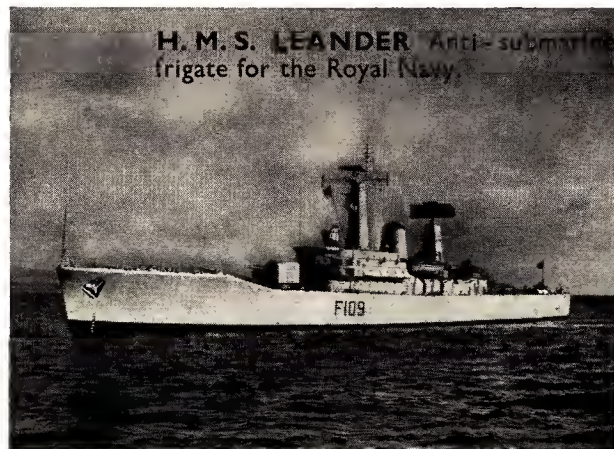
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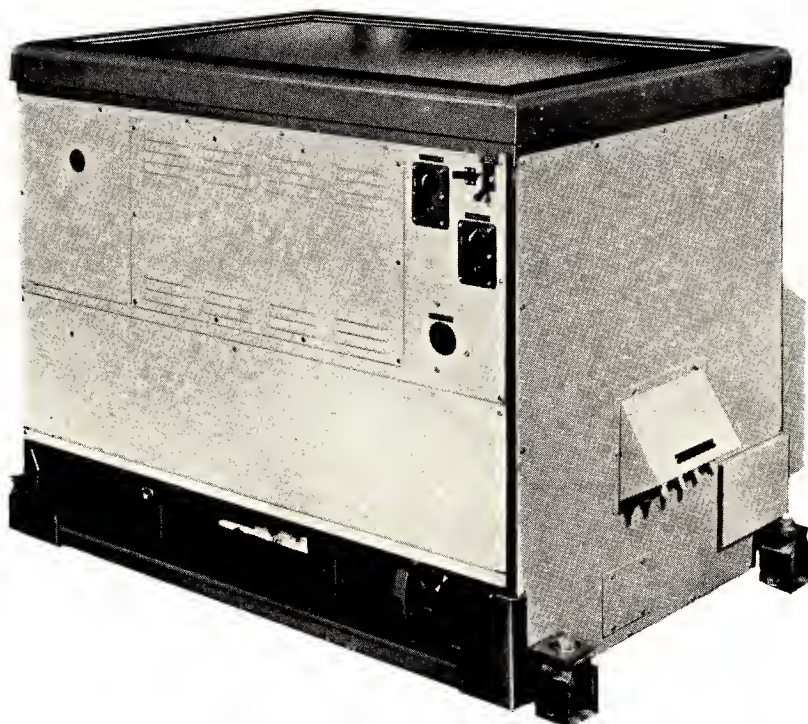
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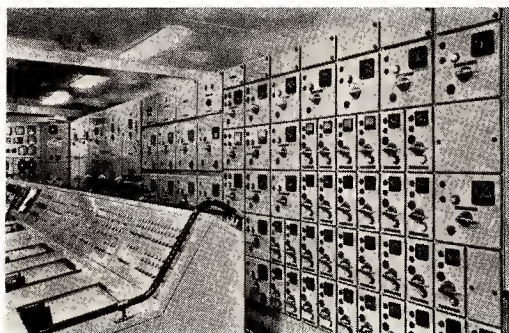
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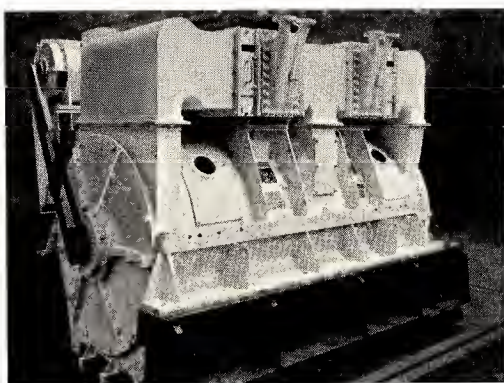


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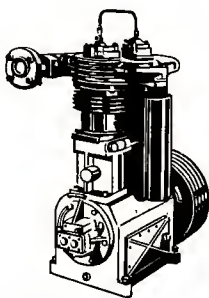
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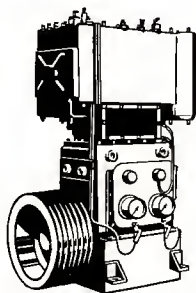
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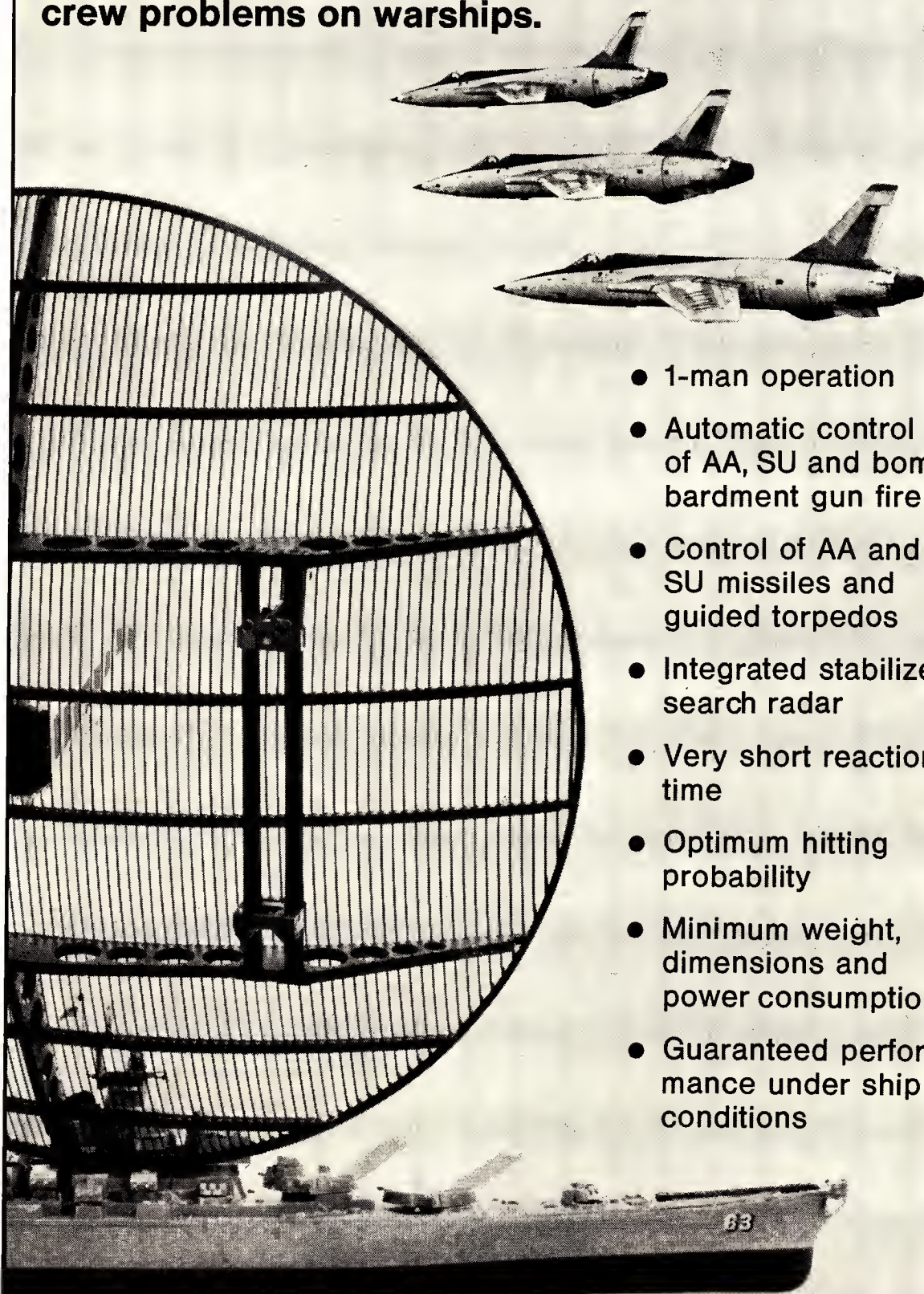
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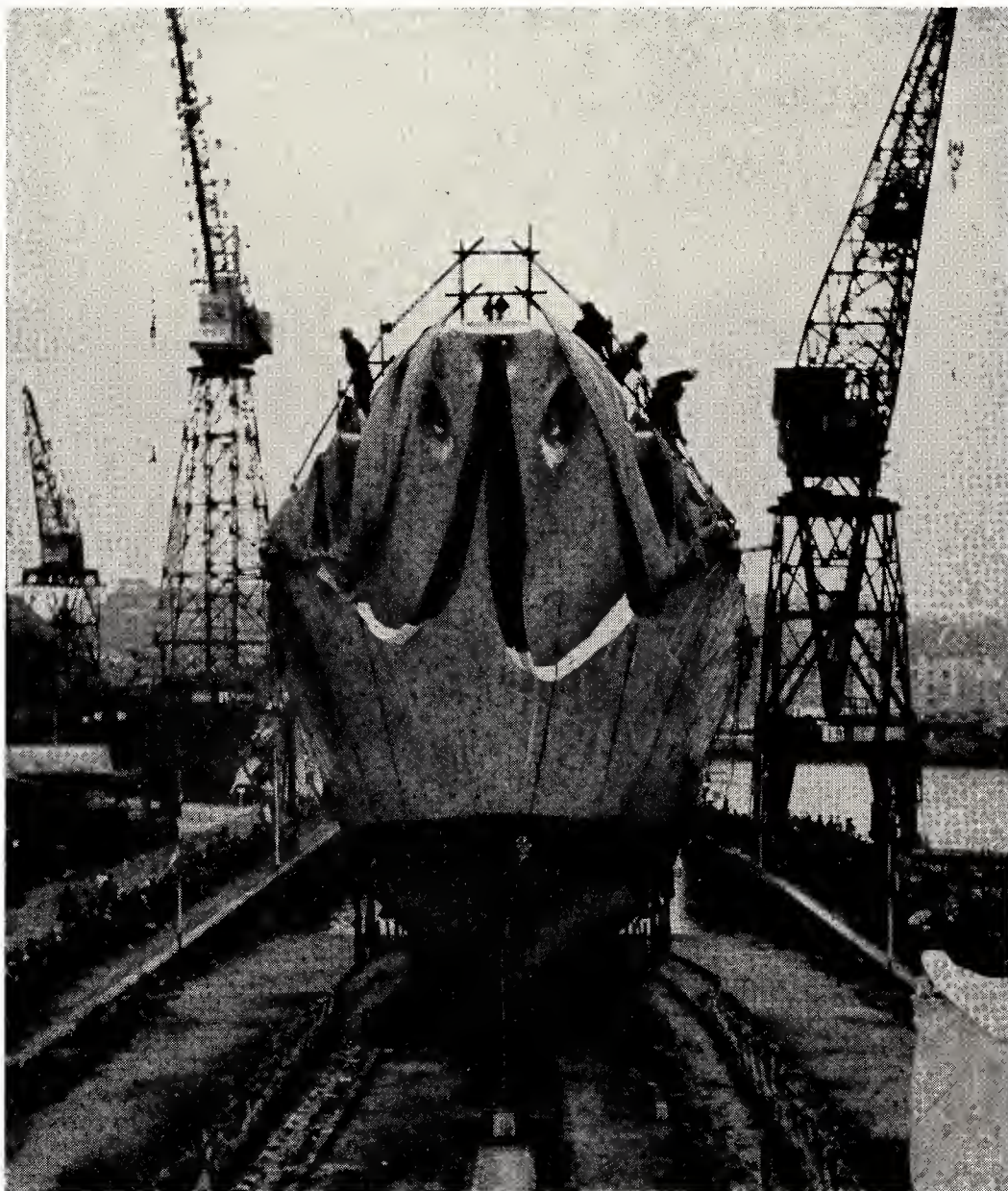
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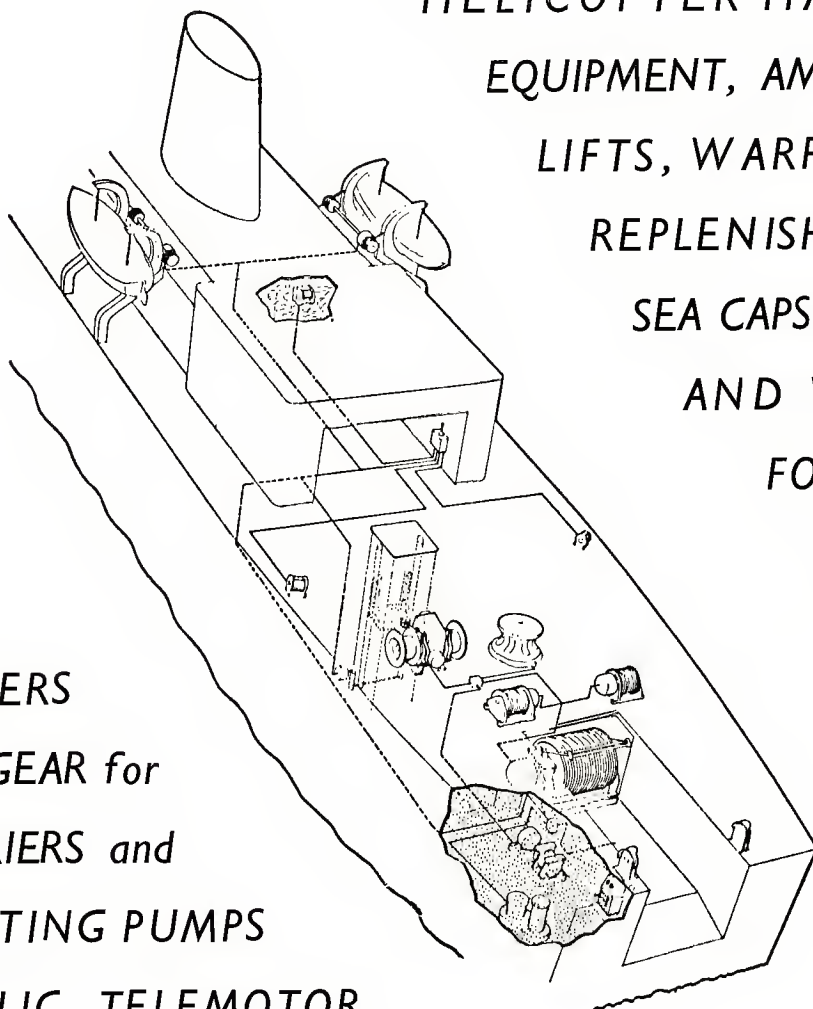
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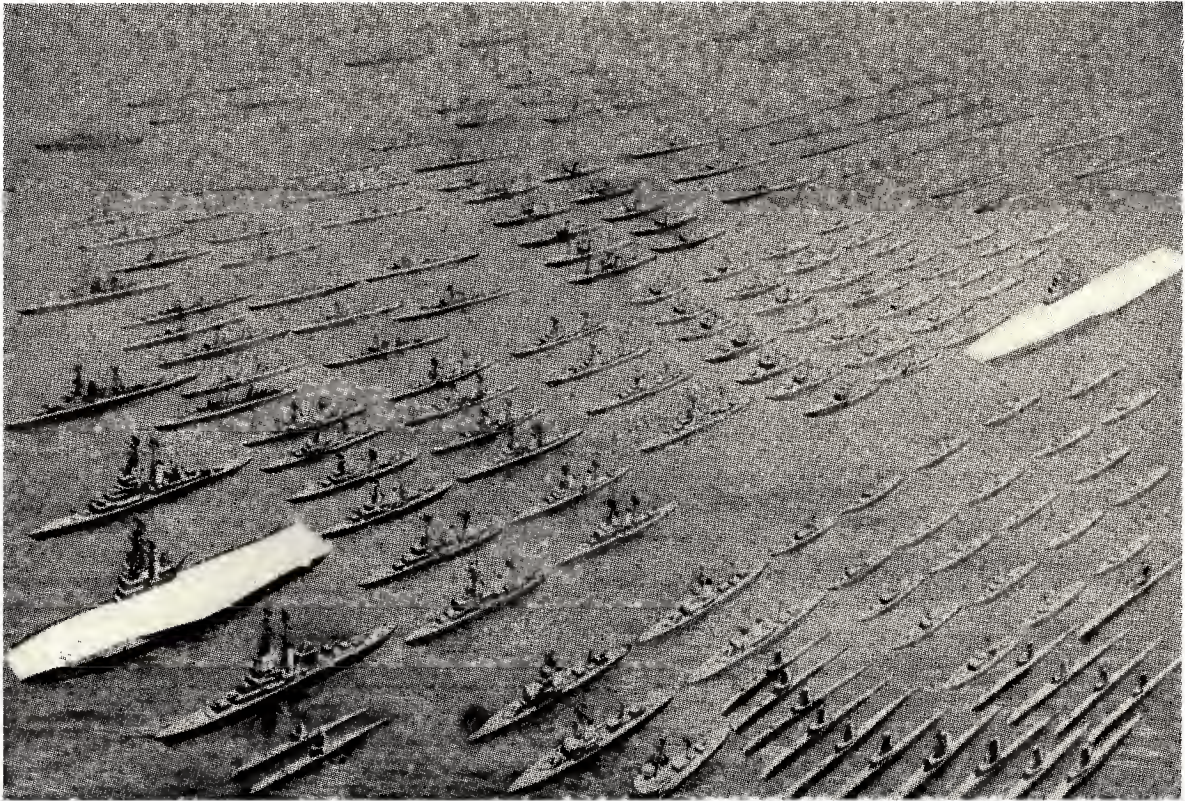
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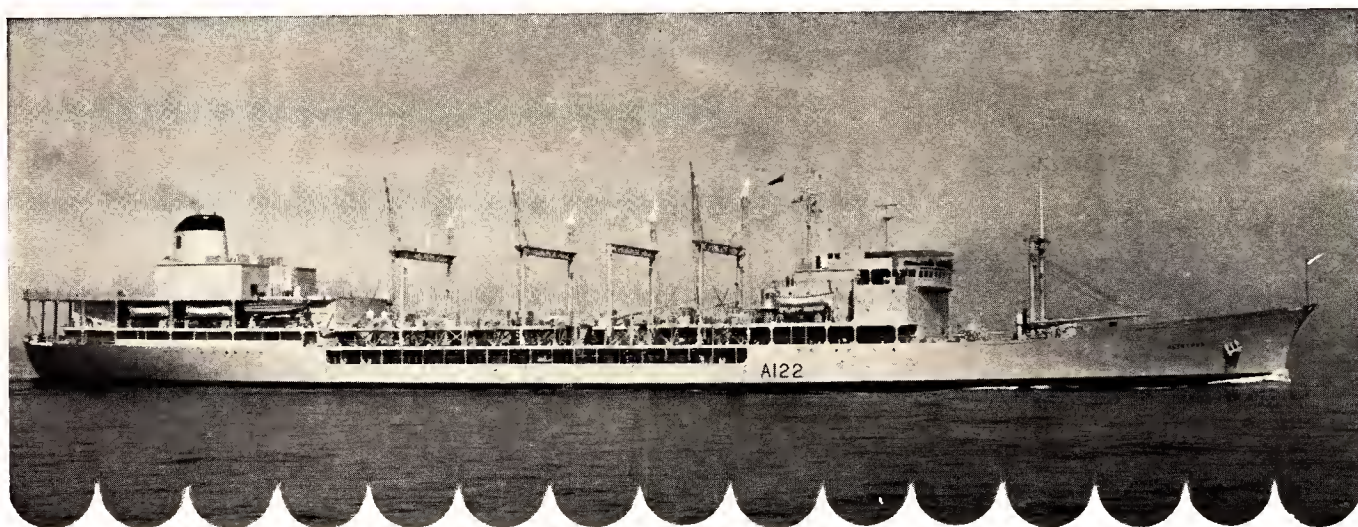
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Aircraft Carrier HERMES and Frigate MINERVA (left) being refuelled by Fleet Replenishment Tanker TIDEFLOW between them, the carrier simultaneously receiving supplies from Air Stores Support Ship RELIANT while Frigate GALATEA takes stores from Fleet Replenishment Ship RETAINER (right).

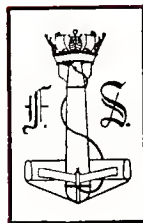
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FOREWORD

THREE SCORE YEARS AND TEN. That is the span of *Jane's Fighting Ships*, a span which links the Victorians with the Elizabethans, the 19th Century with the 20th, and takes in pretty well every invention and scientific advance that has ever been applied to the military propensities, propulsion and navigation of warships; a span which has raised the naval vessel from a mere platform for guns moved by elementary engines, to the sophisticated honeycomb of black boxes controlling every conceivable offensive and defensive weapon, and powered by gas turbines or nuclear reactors, which is the fighting ship of today.

This is the 70th edition of an annual which has frequently been described as the bible of the navies and the taken-for-granted extra log in the charthouses of most ships, and to mark the occasion several additional features have been incorporated in this issue. Not only has the reference section been increased by 18 pages, but there are illustrated aircraft and guided missile supplements, and a historical annex portraying some of the most interesting ships which have appeared in successive editions of *Jane's Fighting Ships* covering a century of warship development.

It will be observed that this anniversary issue is considerably thicker than most previous editions. It also has a new look. The entire book has been reset in a slightly larger, more elegant, cleaner and much easier-to-read type face, and the arrangement of the pages has a clear cut appearance enabling easy reference to be made to data in the tables and giving the illustrations a bolder projection.

In the preamble to each national chapter an additional summary appears this year in the shape of a table enumerating the ships in each category, thus affording a quick appraisal of the strength of the fleet without having to turn the pages and make a count.

Another new departure this year is that dimensions, measures, capacities, pressures, temperatures, etc are given in both British and metric figures. This has been applied to all the major warships and will eventually be extended to the smaller vessels. That this was not carried through to minor craft was due simply to the time factor, for despite the extra work involved in restyling the annual and adding features for the anniversary edition it appears somewhat earlier than for some years past.

From the contents page it will be seen that, for the first time, more than a 100 navies and maritime defence forces are listed. This means that the number of navies in the world has nearly doubled during the present editorship for when that began in Feb 1949 there were only 50-odd navies extant. It also shows how universally it is accepted that the sea is the seat of military power. The growth in the number of navies and the increase in the number of warships is largely the result of the break-up of the empires and the consequent splintering off of indigenous peoples and races who have become independent. In some cases surplus warships have been gratefully accepted from the erstwhile suzerain empire or power from which the newly independent country seceded, but a number of the emergent countries have ordered warships to their own specific requirements. This increase in the number of smaller navies together with the increase in the number of smaller warships, support ships and auxiliaries built or converted by the two paramount naval powers, the USA and the USSR, accounts for the fact that there are now more warships on the navy lists than ever before in "peacetime", a word which must go in quotes because ever since the Second World War ended a minor or major war has been going on somewhere practically all of the intervening time and, particularly in the East, the world can hardly be said to be at peace in the good old-fashioned sense of no conflict going on anywhere at all.

In this issue particulars are given of some 13 500 ships in the navies or maritime defence forces of 103 countries. The strengths of the 55 largest of these navies are summarised in a two-page-spread table at the end of the book which shows at a glance the number of warships of each category in each navy, allowing spot comparison between the maritime nations of the world.

In addition to the naval aircraft and missile supplements and the anniversary historical section, some 650 new illustrations have been added to the main warship reference section, comprising 570 photographs and nearly 80 scale drawings. Altogether there are some 2,200 illustrations in the book including about 400 drawings.

A great volume of new facts and figures have also been added to this edition. The technical ship data, reference tables and specialised

notes have been extensively revised and in many cases considerably augmented in the light of new information received and to keep pace with the ever changing naval scene. The amount of fresh material in this edition is much above the average. The aircraft and missile supplements have been added to project a picture of naval power *in toto* with the surface warships and submarines. The historical annex traces the development of warships, for well over a century, as pictured in *Fighting Ships* by photograph and drawing for 70 years, so far as space allows.

United States

As forecast in last year's edition of *Fighting Ships* the second nuclear powered aircraft carrier, authorised under the Fiscal Year 1967 new construction programme, and designated CVAN 68, is to be named after Fleet Admiral Chester W. Nimitz, although in July this year the name was officially shortened to *Nimitz*. And in the Fiscal Year 1968 new construction programme long lead items were approved for the third nuclear powered aircraft carrier which will be authorised in the Fiscal Year 1969 programme. A fourth will be included in a closely following new construction programme.

The United States Navy already has eleven recently built or extensively modernised attack aircraft carriers of the largest size; the nuclear powered *Enterprise*, 85,000 tons full load displacement, and the ten hardly less powerful but conventionally powered *America* of 77,600 tons full load, the *Constellation*, *Forrestal*, *Independence*, *Kitty Hawk*, *Ranger* and *Saratoga*, 59,000 to 76,700 tons, and the *Coral Sea*, *Franklin D. Roosevelt* and *Midway*, 62,000 to 63,400 tons. Another conventionally powered attack aircraft carrier of the largest size, the *John F. Kennedy*, 80,700 tons full load was launched in May. She, with the three nuclear powered giant attack aircraft carriers to be built, will bring the number of really large and up-to-date CVAs and CVANs up to the target of 15 which has long been considered the US Navy's minimum operational requirement. Hitherto the US Navy has had to use the best of the 24 considerably smaller war-built Essex class aircraft carriers to make up the number of attack aircraft carriers to 15 for operational deployment, but doubtless these will be reduced to support aircraft carriers successively as the new and much bigger ships building are commissioned for service. But it is possible that *Oriskany*, the last of the "Essex" class to be completed, and at least one other of her best preserved and modernised sister ships, may be kept in "attack" status for the absolute limit of their effective lives in view of the fact that the Royal Navy is in the process of phasing out aircraft carriers. Some two or three years ago the US Secretary of Defense proposed to reduce the attack aircraft carrier strength to 13 ships. But British intentions forced a reassessment. In the United States the fact is recognised that the existence of a British aircraft carrier force of at least five ships, of which three can properly be classed as CVAs on a par with US aircraft carriers, is in almost any foreseeable set of emergent circumstances a definite asset to the United States, and so, until it was cancelled, was the prospect of the completion of a new British CVA in the early 1970s.

Now that the Royal Navy is not only not going to have a new aircraft carrier but is to have her existing aircraft carriers withdrawn one by one, the operational US attack aircraft carrier fleet might be increased not only from the under par 13 to the minimum 15 but extended to a desired 17.

The Indian Ocean is still essentially a Western ocean and the problem is not to let it become otherwise by default. One wonders what decisions would be hurriedly implemented and which just as quickly reversed if another great power quite as conscious as the USA of the Indian Ocean gap, the USSR, suddenly produced aircraft carriers to bridge it. One of the reasons for the British decision to have no more aircraft carriers is said to be that the Soviet Navy had none. But it could be argued that the USSR with her Navy, of unfortunate geographical necessity, divided into four fleets, in the North, in the Baltic, in the Black Sea and in the Far East, stationed at the four-points-of-the-compass extremities of her vast trans-continental territory straddling Asia from the Arctic to India longitudinally and from Scandinavia to Alaska latitudinally, needs the Indian Ocean link between European waters and the Pacific Ocean more than the USA has ever needed it and as much as Great Britain used to need it. Now the USSR must appreciate as keenly as any other power that aircraft carriers have been the most valuable military instruments in preventing or containing all the near-wars and minor conflicts since the end of the Second World War, and in recent years ships of the Soviet Navy, or naval intelligence vessels masquerading in other guises, have practically shadowed US and British aircraft carriers in the Pacific,

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FOREWORD—continued

the Atlantic and the Mediterranean. The USSR must by now, therefore, have made a profound study of how aircraft carriers are used. This, taken in conjunction with the now generally accepted estimate that 90 per cent of the tactical air support in all the brush fires and chronic hostilities which have broken out over 20 years has been supplied by carrier borne aircraft, might encourage a country with such obvious maritime aspirations as the USSR to build aircraft carriers and give her a train of mobile air bases all the way to Vladivostok. As a result of the experience gained by the USA during the war in Vietnam the consensus of American military opinion is that the campaign in the air could not have been conducted efficiently without aircraft carriers, and it has been said that when US defence chiefs learned of Great Britain's decision to phase out aircraft carriers they urged the Commander-in-Chief (The President) to build as many new ones as could be afforded as quickly as possible. This must have given not only Britain, but Russia too, furiously to think.

It is not only in the field of fixed-wing aircraft carriers that the US Navy is to provide ships of outsize dimensions. The proposed entirely new type of vessel designated LHA has been conceived as a combination of the LPH (helicopter carrier or amphibious assault ship; and the LSD (landing ship dock). It is intended to be a large general purpose assault ship of about 40,000 tons displacement with a length of about 800 feet and as such will surely be an amphibious capital ship. Six to ten of these battleship-weight vessels are planned under a multi-year procurement programme.

Leading as it has for a quarter of a century in colossal aircraft carriers, aspiring as it does to have gargantuan amphibious ships, it is not surprising that the USA is in the forefront of leviathan submarine construction. In 1967 the US Navy commissioned the 41st and last of the planned deterrent fleet of nuclear powered ballistic missile submarines. Several more units of the nuclear powered fleet type have also been completed, bringing the total number of US nuclear powered submarines built or about to be commissioned at the turn of the year to no fewer than 80.

In addition to a great fleet of nuclear powered submarines the US Navy has for some years been operating a nuclear powered aircraft carrier, a nuclear powered cruiser and a nuclear powered frigate. Now a second nuclear powered frigate, the USS *Truxtun*, has been completed, the biggest frigate ever built, but she has soared out of the normal destroyer leader/frigate range and is of quite cruiser-like dimensions.

Still keeping in the mammoth vein, a great talking point is the possible return to service of one of the only four surviving battleships laid up in 1955-58. Since then all other nations which possessed them have scrapped their battleships or relegated them to accommodation hulks or museum pieces. At mid-year *New Jersey* was broken out of her mothball nest for activation feasibility studies and was later moved in preparation for rehabilitation for service, with possible participation in the Vietnamese war as a bombardment vehicle or outsize monitor in prospect. But there are many sagacious old heads who argue that a single battleship of 1940-43 building vintage in hostile waters with a crew at least ten years removed from battleship practice might be more of a liability than an asset, would probably require more support and screening ships to maintain and protect her than could justifiably be spared from the war effort, and would simply be inviting kamikaze efforts by aircraft, torpedo boats or missile patrol boats to destroy her on a scale commensurate with the catastrophic destruction of *Prince of Wales* and *Repulse* in the same waters on 10 Dec 1941. However reputedly unsinkable a battleship might be it would be a matter of prestige for the enemy to make her the prime target and, if successful in scoring a bullseye, of immense propaganda value.

USSR

The Soviet Navy has done it again. For several years past the USSR has produced every year a prototype ship which has eventually run into series production and considerably added to the projection of the military power of the Soviet Union overseas. This year is no exception and, although she is scarce from her sea trials, this annual secures, as we go to press, a broadside portrait of the first unit of the latest guided missile armed destroyers of the "Kresta" class of which full particulars are also given. Sister ships are due to follow in her wake in quick succession. There is a tendency, perhaps for prestige and propaganda purposes, to refer to these vessels as "rocket cruisers" instead of guided missile destroyers or frigates, and the term, it has to be admitted, is not inapplicable, although they are too much on

the light side to fall into the true cruiser category reserved for ships of very long endurance which can operate quite independent of support. There may be another reason. The Soviet policy is to progressively reduced the number of the bigger cruisers in operation in favour of smaller types. The older cruisers are already discounted, except for training and accommodation purposes, and even the number of the now well known "Sverdlov" class cruisers is to be reduced. So the mantle of the cruiser, both name and role, is being handed down.

Parallel with the steady progress in the development of the destroyer-frigate-escort broad category the Soviet Navy is also annually turning out yet another type of submarine. After a quick succession of diesel powered submarines of several different types, a nuclear powered anti-submarine type and a nuclear powered ballistic missile armed type, there are now apparently two types of cruise missile submarines in operational service, the earlier sub-group having six missile launchers and the later sub-group being provided with eight missile launchers. In recent years the total number of Soviet submarines has tended to decline through the retirement of obsolescent boats, but this year the numerical strength seems to have been held and to have tilted upwards, but of course in aggregate power the Soviet submarine fleet is immensely stronger from the influx of big and modern nuclear powered submarines at the head and the draining off of the older and smaller boats at the tail. It is estimated that there are now about 400 effective submarines in the Soviet Navy.

It is not only in strike surface warships and in underwater warships that the USSR is escalating. She is also increasing the number of para-military ships and the number of auxiliaries thinly disguised as commercial, fishing, hydrographic and research ships. And the Soviet Union is expanding her merchant fleet on an unprecedented scale. If this increase in the tempo of shipbuilding emanated from any other country it would be regarded by the USA and Great Britain as just another source of competition. But in the case of the Soviet Union, not only the English speaking nations and Commonwealth countries, but all the nations in NATO, CENTO and SEATO, realise that with every new ship constructed the Merchant Marine of the Soviet Union considerably increases her potential as a multiple instrument of economic, political, psychological, and military persuasion.

Since 1958 the Soviet Union has advanced from 21st to 5th place among the maritime nations. It has acquired some 7,000,000 tons of shipping, most of which is modern, fast, and well designed. This figure is being increased at the rate of over 1,000,000 tons per year. Today the Soviet merchant fleet has well over 2,000 ships aggregating about 10,000,000 tons. Under a new plan the USSR has set its target at 14,000,000 tons of shipping by 1970, 18,000,000 tons by 1975, and 25,000,000 tons by 1980. The dramatic leap in tonnage as compared with the number of ships indicates that the trend towards larger ships will continue. If Soviet aims are achieved the USSR will have a much bigger merchant fleet than Britain who is No. 1 at present with 4,300 ships of 21,500,000 tons and whose fleet has remained fairly constant for some years, and the USA who is No. 2 with 3,000 ships (excluding the Great Lakes) of 18,800,000 tons (of which 8,000,000 tons are laid up in reserve) and whose merchant fleet is declining. After the Second World War the Soviet Union concentrated her efforts primarily on naval construction and rebuilding shipyards destroyed by enemy action during the war. But now, national priorities for a strong fighting navy having been met, and with modern shipyards available for commercial construction, the USSR is able to devote her attention to the build-up of her merchant navy even more than for some years past. The growth of the Soviet merchant marine is inextricably linked with the political and military aims of the USSR and to this end it must encompass the Seven Seas. As the size of a nation's mercantile marine is the measure of her maritime interest and of necessity the might of her fighting navy it is evident that the Soviet Navy will for years to come be a force to be reckoned with, deployed on a world-wide scale, on the move as never before, and capable of exerting a strong maritime influence on universal affairs.

United Kingdom

The highlights during the year for the Royal Navy were in the submarine field. HMS *Resolution*, the UK's first ballistic missile armed nuclear powered submarine, was completed and carried out successful sea trials, and the second Polaris submarine *Renown* was launched. Two sister deterrent nuclear powered submarines, *Repulse* and *Revenge* are in advanced stages of construction. The second nuclear

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FOREWORD—continued

powered fleet submarine HMS *Valiant*, made a record submerged passage from Singapore, and the third nuclear powered but orthodoxly armed fleet submarine, *Warspite*, was completed. The fourth, *Churchill*, and two more "Valiant" class submarines have been ordered, and a nuclear powered fleet submarine of improved design is projected. Including the prototype nuclear powered submarine HMS *Dreadnought*, this means that the Royal Navy will have eleven nuclear powered submarines by 1970-71. It is perhaps not generally realised that the four Polaris submarines are not only armed with ballistic missiles, thus constituting the UK's contribution to the strategic nuclear deterrent of the West, but with the same orthodox torpedo armament as the nuclear powered fleet submarines, and therefore can be used as fleet submarines as well as being deterrent submarines.

Events of the year have amply demonstrated that air power will be as indispensable to the Fleet of tomorrow as it is today. Despite the governmental dictum that aircraft carriers are to be phased out they have done everything but phase out. As emergency piled on emergency from Suez to the Far East the Ministry of Defence not only turned to the Royal Navy as usual but had recourse specifically to the aircraft carrier, and nearly all of the Fleet Air Arm that was seaborne played a notable part in containing or influencing each crisis as it arose. The fixed-wing aircraft carriers *Victorious*, *Hermes* and *Eagle*, and the helicopter carriers *Albion* and *Bulwark* all deployed on their appointed missions according to the exigencies of world affairs, some operationally and others standing by as potential. Only *Ark Royal*, undergoing a special refit and modernisation to enable her to operate the Phantom aircraft, and *Centaur*, in expedient limbo but still serving in a humble accommodation capacity, did not participate in naval aviation's call to arms in swiftly altering world strategy.

Of the only three remaining cruisers, HMS *Blake* is still being converted to enable her to operate the Sea King anti-submarine helicopter, and her sister ship *Tiger* is officially scheduled to be similarly reconstructed as soon as possible afterwards, but there is no mention of the conversion of the other ship of the class, *Lion*, in the 1967-68 Navy Estimates.

The "Type 82" as a class of four originally envisaged will not materialise, but the single Type 82 destroyer already ordered will be completed. The design, instead of being continued in its present form for further ships of this class, will be developed in two ways. It will be enlarged into a new class of "cruiser" to succeed the "Tiger" class, and also scaled down for a new class of smaller destroyers. The "cruisers", which will provide command and control for naval forces, will be armed, like the Type 82, with the Seadart surface-to-air guided missile system and will carry Sea King helicopters armed with anti-submarine weapons and sonar. The new destroyers will be equipped with a modified version of Seadart and a smaller helicopter. It remains to be seen, however, whether these officially promulgated "cruisers" (which the Royal Navy anticipates will be not so much cruisers as enlarged destroyer leaders) and smaller destroyers will actually materialise or will be sacrificed on the altar of economic penury like the long promised but now cancelled new aircraft carrier, the approved but subsequently rescinded fifth Polaris submarine, and the Type 82 in the plural. There is a large school of thought in the Service which considers that new warships should be tailored to the measured requirements of the United Kingdom's naval defence according to designs formulated by the Admiralty Board, instead of being subjected to the vagaries of political expediency.

During the past year three more of the very successful general purpose frigates of the "Leander" class have been completed, *Argonaut*, *Danae* and *Juno*, three others have been launched, *Andromeda*, *Hermione* and *Jupiter*, another three have been laid down, *Bacchante*, *Charybdis* and *Scylla*, and a further two have been ordered, to be named *Achilles* and *Diomedes*, bringing the number of ships of this class up to 24.

HMS *Intrepid*, the Royal Navy's second assault ship, was completed, and the novel helicopter support ship *Engadine*, the exercise mine-layer *Abdiel*, and the first of four coastal survey ships, *Bulldog*, were nearing completion, as was the conversion of the anti-submarine frigate *Exmouth* to full gas turbine propulsion which will be the prototype for the next generation of frigates, evidently the small frigates being planned to succeed the "Leander" class, designed to carry a new close-range surface-to-air guided missile (to follow Seacat), a medium range gun, and a new utility helicopter to replace the Wasp. Eight more coastal minesweepers are being converted into mine-hunters to join the eight already in commission.

The Fleet Train has not been neglected. New support ships comprise two fleet replenishment ships, *Regent* and *Resource*, and three stores support ships, *Lyness*, *Stromness*, *Tarbatness*.

France

Pride of place in the French new construction programme goes to *Le Redoutable*, the republic's first nuclear powered ballistic missile submarine, which was launched at the end of March. A sister ship *Le Terrible* was laid down in June, while three more of the class are planned. A nuclear powered fleet submarine, *Rubis*, is projected. France now has a powerful and well-balanced fleet of combatant warships and support vessels of all categories, but the naval effort has been preoccupied with providing auxiliaries for and supplying the Pacific Nuclear Experimental Centre.

Italy

After recasting the design over several years Italy has launched the first submarine to be constructed in the country since the Second World War, *Enrico Toti*, and three others of this comparatively small hunter killer type are expected to follow in fairly quick succession. A new guided missile cruiser, *Vittorio Veneto*, has also taken the water and she will have experimental arrangements similar to those in *Giuseppe Garibaldi* for launching medium range missiles.

Germany

The Federal Republic after much design experimentation is gradually building up another fleet of U-boats in her own yards; but for guided missile armed destroyers she has turned to the United States where three are under construction for the Bundesmarine. Similar ships will be built later in German yards. The West German Navy has concentrated on building a large number of support ships and auxiliaries.

Japan

In a remarkably short time Japan has built up a numerically large fleet of most categories from submarines and large destroyers to minesweepers and small patrol boats under two successive and well considered five-year-plans. Now, under a third five-year defence programme, larger and more sophisticated warships are to be built, including two destroyer helicopter carriers.

The last two decades have seen very considerable advances in ship design and propulsion, in communications and navigation, in surveillance and weapon control, in naval aircraft and rocketry, and the significant development of sub-surface vessels able to travel at speeds comparable with, or even exceeding, those of modern surface craft.

Considerable attention is now being paid to the development of non-displacement craft—hydrofoil vessels and air cushion vehicles (or surface effect ships)—which can skim over waves at speeds ranging up to 80 knots, with even higher speeds in prospect. Large hydrofoil craft specially built for and being evaluated by the Canadian and US navies, and small hydrofoils in service with the Philippine navy, are already described in *Jane's Fighting Ships*.

Behind the scenes a great deal of activity is taking place to expedite the further R and D required before the military potential of these fast non-displacement craft is fully assessed. However, results so far achieved—their apparent ability to perform ASW, patrol, amphibious warfare, and transport missions at high speed, and their reduced vulnerability to submarine attack—indicate that the next decade may well see a new generation of high-speed, highly versatile attack and logistics craft forming the nucleus of a revolutionary 60 (or even 80) knot navy.

In addition to military investigations and experimental applications, so much is developing in the commercial field in the form of passenger-carrying hydrofoils and hovercraft for inland and coastal waters and for cross-channel ferries that, concurrently with this edition of *Jane's Fighting Ships*, the first edition of a new yearbook entitled *Jane's Surface Skimmer Systems* is being published. This covers not only existing hydrofoil and air cushion craft and projected designs of future large-scale developments for both military and civil use, but also the latest ideas in air-riding equipment for handling and transferring materials of all kinds in varying categories of weight from a few pounds to many tons. Although the major application of this equipment is in industry, it has great potential for easy and rapid movement and transfer of military stores and equipment.



M.S. 'KOMETA' for speed, comfort and economy !

From the mainland to outlying islands —
for journeys between coastal cities and
resorts — in fact, wherever a speedy,
efficient hydrofoil is called for.

The 'Kometa' takes 100 passengers in
comfort, and has a cruising range of
320 miles.

FULL DATA

Length	—35.2 m.
Beam, amidship	—6.0 m.
Breadth (including mouldings)	—9.6 m.
Draught, afloat	—3.2 m.
Draught, foilborne	—1.4 m.
Displacement, empty	—41.23 t.
Displacement, loaded	—56.6 t.
Main engines	—2 × 900 h.p.
Cruising speed	—32 knots
Maximum speed (on a quiet sea, with wind up to force 3)	—34-35 knots
Passengers	—100
Fuel stock	—3,000 kg.
Fuel consumption	—193 gr./h.p./hour
Cruising range	—320 miles



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FOREWORD—continued

Jane's Fighting Ships will continue to describe all skimmer craft, whether hydrofoil or air cushion, in service or authorised for naval or maritime defence purposes. However, details of forward designs and projects, covering potential military applications from small river gunboats to huge tank landing craft and missile carriers, are to be found in *Jane's Surface Skimmer Systems* which is designed to keep abreast of all new ideas in this revolutionary form of high speed transportation by non-displacement craft.

Fighting Ships is much indebted to the Naval Boards, Navy Departments and Ministries of Marine and Defence who furnished information and photographs. This was facilitated by the kindness of the Ambassadors and Naval Attaches in London, including: Rear-Admiral Enrique O'Reilly, Chilean Navy; Rear-Admiral M. A. Noel, French Navy; Rear-Admiral V. Patrelli Campagnano, Italian Navy; Rear-Admiral Enrique Carbonel C., Peruvian Navy; Rear-Admiral Louis J. Kirn, United States Navy; Commodore Ulf E. A. Reinius, Royal Swedish Navy; Brigadier-General Z. Zamir, Israeli Embassy; Brigadier S. P. Palmer, SM, DFC, SAAF, South African Embassy; Captain Julio A. Acuña, Argentine Navy; Captain A. A. de Malafaia, Brazilian Navy; Captain P. Carvajal, Chilean Navy; Captain H. Nørgaard, Royal Danish Navy; Captain O. Vitikka, Finnish Navy; Captain E. G. Kray, Federal German Navy; Captain S. Mourikis, Royal Hellenic Navy; Captain Goro Yoshimura, Japanese Embassy; Captain B. ter Brake, Royal Netherlands Navy; Captain J. C. Munoz-Delgado, Spanish Navy; Captain A. Habanchang, Royal Thai Navy; Captain F. Basol, Turkish Navy; Colonel O. T. Mehn-Andersen, Royal Norwegian Embassy; Colonel J. Kaczorek, Polish Embassy; Colonel Branko Kobali, Yugoslav Embassy; Commander L. A. G. Cardoso, Portuguese Navy; Lt. Colonel R. Close, Belgian Embassy.

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Dr Luigi Accorsi; Rear-Admiral M. J. Adam, CVO, CBE; Professor Alfredo Aguilera; Dr Giorgio Arra; Mr William H. Davis; Dr Aldo Fraccaroli; Dr Giorgio Giorgerini; Mr Hajime Fukaya; Constructor Lt-Commander Shizuo Fukui; Commander Alvin H. Grobmeier; Captain T. D. Manning, CBE, VRD, RNVR; Ing Augusto Nani; Mr Norman Polmar; Mr C. W. E. Richardson; Mr John S. Rowe; Captain Aluino Martins da Silva; Captain R. Steen Steensen, RDN; Herr Stefen Terzibaschitsch; Mr Godfrey H. Walker; and many others who prefer to remain anonymous.

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Photographs or information for the next edition, the preparation of which starts immediately should be sent as soon as possible to the Editor, "Jane's Fighting Ships", care of Sampson Low, Marston & Co, Potter Row, Great Missenden, Bucks, England.

Raymond V. B. Blackman.

JANE'S

1897



1967

A Century of Warship Development

To celebrate the 70th anniversary of the First Edition of Jane's Fighting Ships the following selection of some of the most interesting naval designs recorded in the successive editions, is offered as a reflection of the great advances in naval architecture and weaponry. The launch dates stretch from 1863 to 1967.

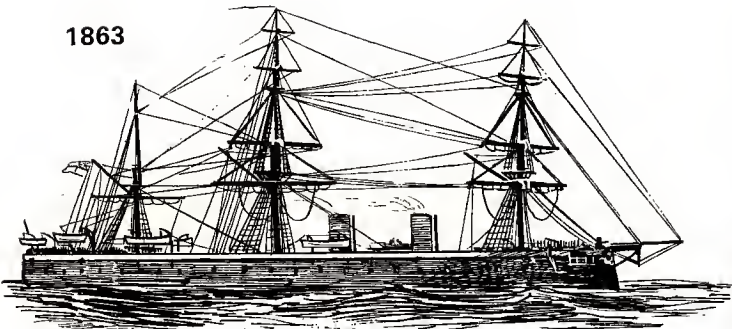
Both illustrations and the occasional snippets of original text are facsimile reproductions from the printed editions.

1863 MINOTAUR UK
1863 NANTUCKET USA
1896 MAJESTIC UK
1898 FUERST BISMARCK Germany
1899 IOWA USA
1896 POWERFUL UK
1897 TORPEDO BOAT France
1902 HOLLAND SUBMARINES UK
1900 MIKASA Japan
1901 BENEDETTO BRIN Italy
1901 BORODINO Imperial Russia
1903 Cuniberti design
1906 DREADNOUGHT UK
1907 INDOMITA8LE UK
1907 SWIFT UK
1908 SOUTH CAROLINA USA
1909 VON DER TANN Germany
1910 LION UK
1912 "E" class SUBMARINES UK
1911 LEONARDO DA VINCI Italy
1911 VIRIBUS UNITIS Austro-Hungary
1913 QUEEN ELIZABETH UK
1916 PENNSYLVANIA USA
1918 HOOD UK
1920 NAGATO CLASS Japan
1915 SVERIGE CLASS Sweden
1921 HOSHIO Japan

1919 HERMES UK
1923 YUBARI Japan
1911 COURBET France
1923 XI SUBMARINE UK
1924 TIGRE France
1925 NELSON UK
1925 LEXINGTON USA
1921 KAGA Japan
1925 AKAGI Japan
1927 NACHI CLASS Japan
1928 YORK UK
1930 "AUGUSTA" CLASS USA
1929 SURCOUF France
1930 ALBERTO DI GIUSSANO Italy
1929 ACATA CLASS UK
1930 THAMES UK
1931 DEUTSCHLAND Germany
1934 MONTECUCCOLI Italy
1934 LE FANTASQUE France
1934 MIKUMA Japan
1936 SOUTHAMPTON UK
1935 DUNKERQUE France
1936 GNEISENAU Germany
1938 ARK ROYAL UK
1937 LITTORIO Italy
1941 YAMATO Japan

1939 TIRPITZ Germany
1940 JEAN BART France
1943 MIDGET SUBMARINE UK
1945 MIDWAY CLASS USA
1944 TRE KRONOR Sweden
1946 BROADSWORD UK
1946 EAGLE UK
1939 AQUILA Italy
1951 SVERDLOV USSR
1952 SURCOUF France
1954 NAUTILUS USA
1952 MITSCHER USA
1955 BOSTON USA
1955 WHITBY CLASS UK
1956 IMPETUOSO Italy
1956 ÖSTERGÖTLAND Sweden
1958 BRAVE BORDERER UK
1959 GEORGE WASHINGTON USA
1957 CLEMENCEAU France
1959 LONG BEACH USA
1960 ENTERPRISE USA
1962 783 and 788 USSR
1963 KROMANTSE Ghana
1963 AMATSUKAZE Japan
1960 DREADNOUGHT UK
1966 RESOLUTION UK

1863



MINOTAUR

(IV.) MINOTAUR (1863): AGINCOURT (1865):
NORTHUMBERLAND (1866): ACHILLES (1863).

circa 10,800 tons. Achilles 9800 tons.

L.: 400 ft. = 122 m.

Achilles: 380 ft. = 116 m.

Guns: Agincourt & Minotaur, 17D (9 in. m.l.) + 4E* (4.7 m.) + 8* (3 pdr., 47 m.m.). Torpedo tubes: 2.

Northumberland, 7D (9 in. m.l.) + 20E (8 in. m.l.) + 1E (6 in. 80 prs.) + 1E (5 in.) + 6E* (4.7 in.) + 10* (3 pdr.).

Achilles, 4D (9 in. m.l.) + 2E (6 in. 8 prs.) + 10E* (4.7 in.) + 8* (3 prs. 47 m.m.).

Armour: f (120 m.m. iron). Belt and battery. Sea speed: Agin., 11 kts.; Minot. and North., 9 kts.; Ach., 8 kts.

Appearing in this first edition, *Minotaur* was the oldest battleship in the Royal Navy. She was armed with 9 inch muzzle loading guns.

MONITORS.

(V.) NANTUCKET & AJAX & CANONICUS & MAHOPAC & MANHATTAN & WYANDOTTE, & CATSKILL & CAMANCHE & JASON & LEHIGH & MONTAUK & NAHANT & PASSAIC (—1863—1865).

L.: 200–225 ft. = 61–68.5 m.

Guns: 2z. Armour: d–e. Speed: 4 kts. (?).

Diff. None worth noting. (Most of these ships are unseaworthy.)



NANTUCKET (USA)

Fuerst Bismarck represented a concentration of power which was to culminate in the great battleship *Bismarck*, 45,000 tons, which although reckoned to be 'unsinkable' was sunk by British naval forces on 27 May 1941.

FUERST BISMARCK. 10,650 tons. Complement 611.

L.: 410 ft. = 125 m. B.: 67 ft. = 20.5 m. D.: 27 ft. = 8.2 m.

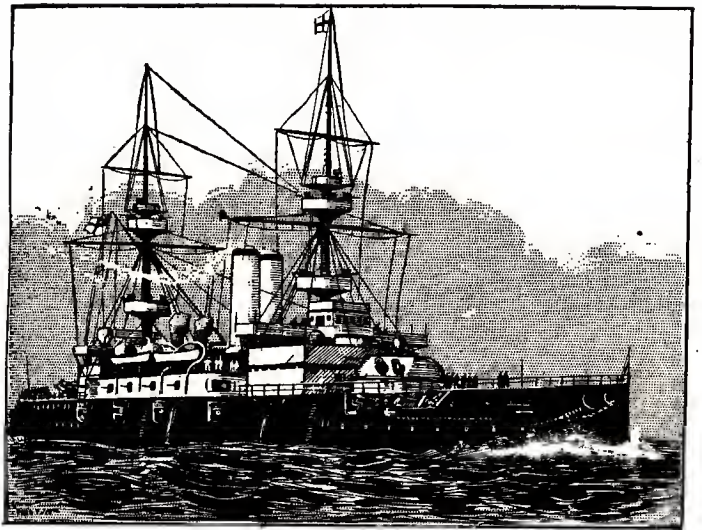
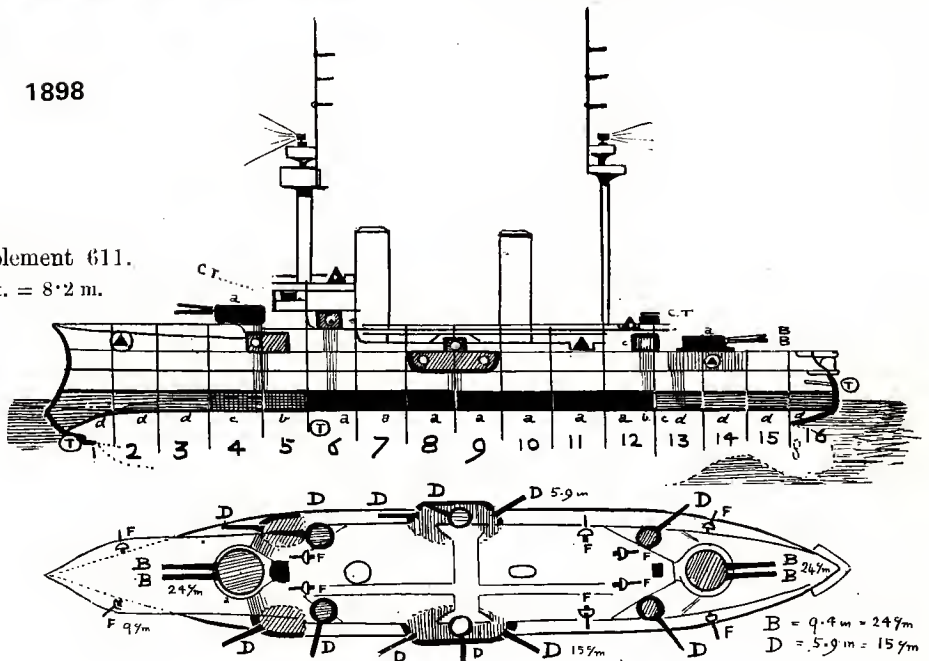
Guns: 4A (9.4 in. = 24 c.m.) + 12D* (15 c.m.) + 10F* (8.7 cm.) + 14*. Torpedo tubes: 6 (5 submerged, 1 in stern above water).

Armour: belt (7½ ft. = 2.3 m. broad) b. Big turrets: b. Small turrets and casemates: d. Flat deck (curved at bow and stern) = c–d. C.T's.: b. & d. Hoists: e. Partial Splinter deck: f.

Machinery: 3 sets triple expansion, 6 cylindrical and 8 Dürr water tube boilers. I.H.P. estimated. Nat. dr. 19,000 = 19 kts. 3 screws.

Coal Capacity: 1000 tons.

1898



(I.) { MAJESTIC (1895)
MAGNIFICENT (1894)

(I.) RENOWN (1895).

1895

L.: 380 ft. = 116 m.

Guns: 4B + 10D* + 14Z* + 12* + 2r. Armour: a & b
Sea speed: 16.5 kts

Only one mil. top on mainmast.

Le Renown a une seule hune mil. sur le grand mât.

Die Renown hat nur 1 Mars auf dem hinteren Maste.

Il Renown ha solamente 1 coffa mil. sull' albero di maestra.

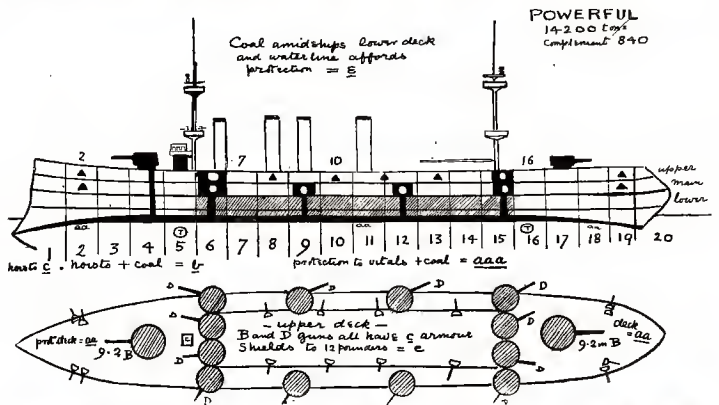
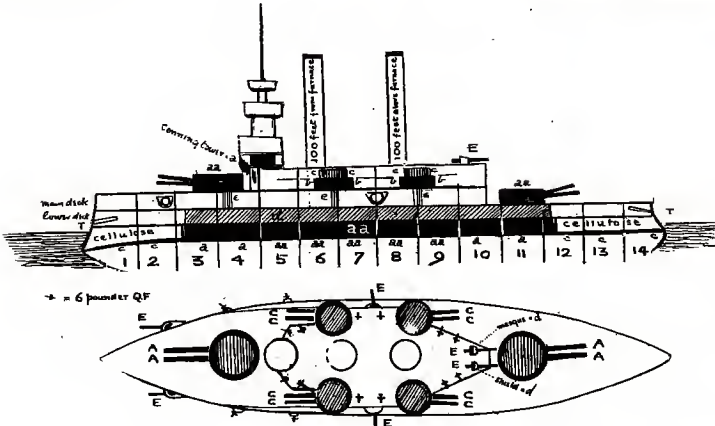
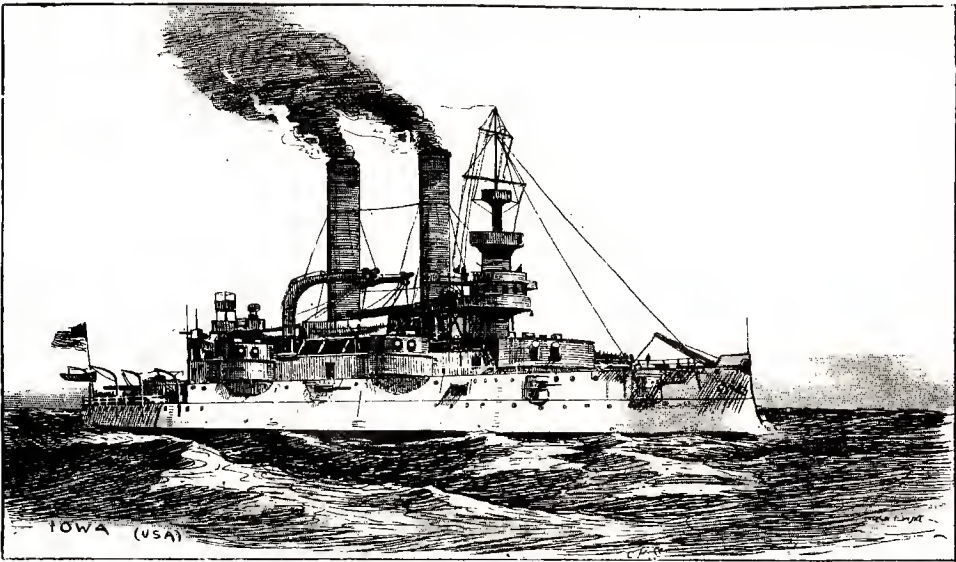
Majestic, one of the major classes of battleships built in numbers and including the most modern gun of the time.

The little monitor *Nantucket*, in the first edition of *Jane's Fighting Ships* in 1897, neatly illustrated by a sketch by Jane himself in the days before photographs had appeared in the annual, and accompanied by one of Jane's pungent comments in the notes, was built in the early 1860's and thus gives *Fighting Ships* a span of over 100 years of reference of "All the World's Fighting Ships" (the original title of the book).

1863

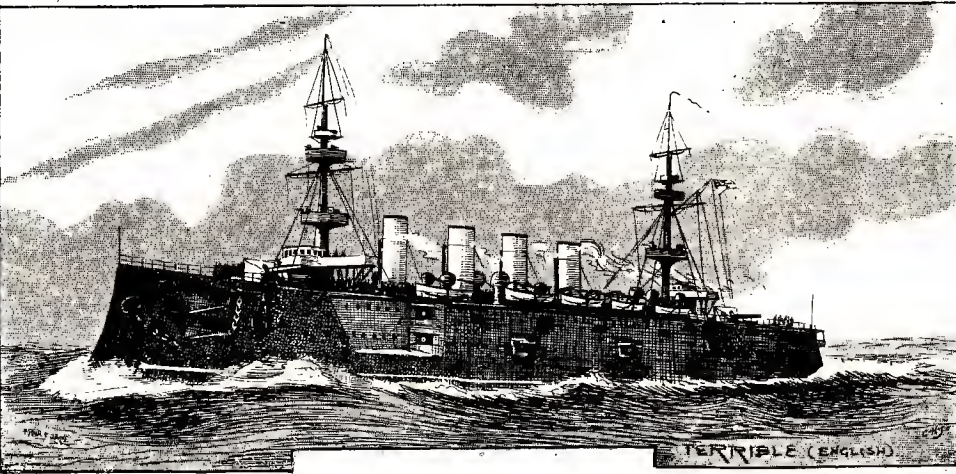
1899

Iowa had funnels 100 feet high from the furnace, a feature necessary to give the required draught.



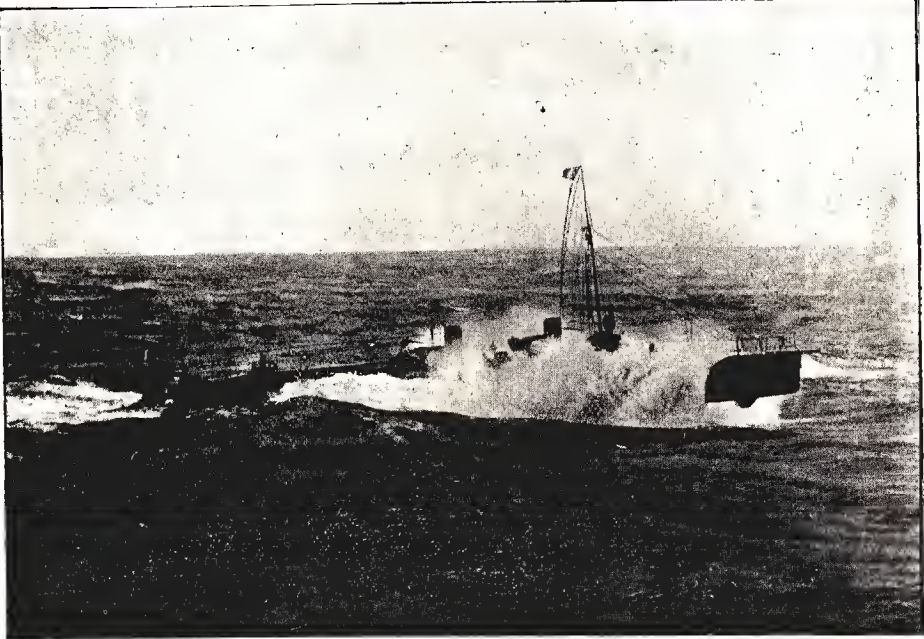
1896

The four-funnelled large cruisers *Powerful* and *Terrible* were the forerunners of the protected and armoured cruiser types.



1897

This picture of a French torpedo boat is of interest in that it was the first photograph to be reproduced in *Jane's Fighting Ships*. Previous to 1899 all illustrations in the annual were drawings.



1902

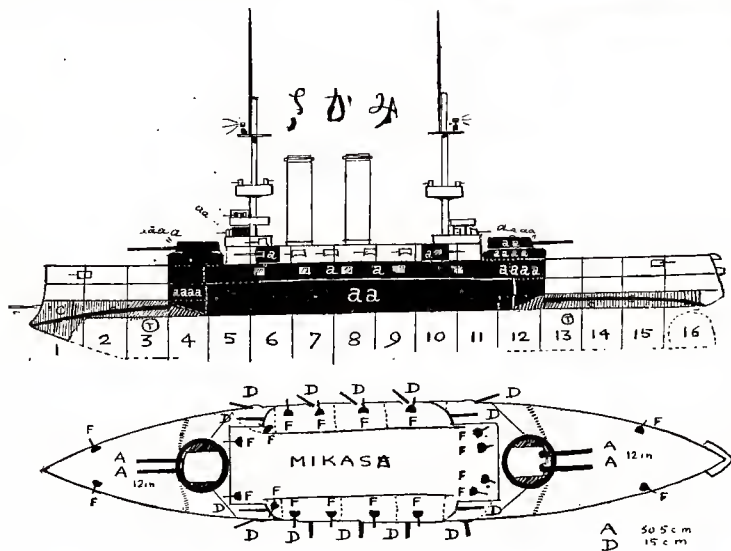
The first submarine in the Royal Navy was of the Holland type, developed by John P. Holland, a British emigrant to the United States.



HOLLANDS.

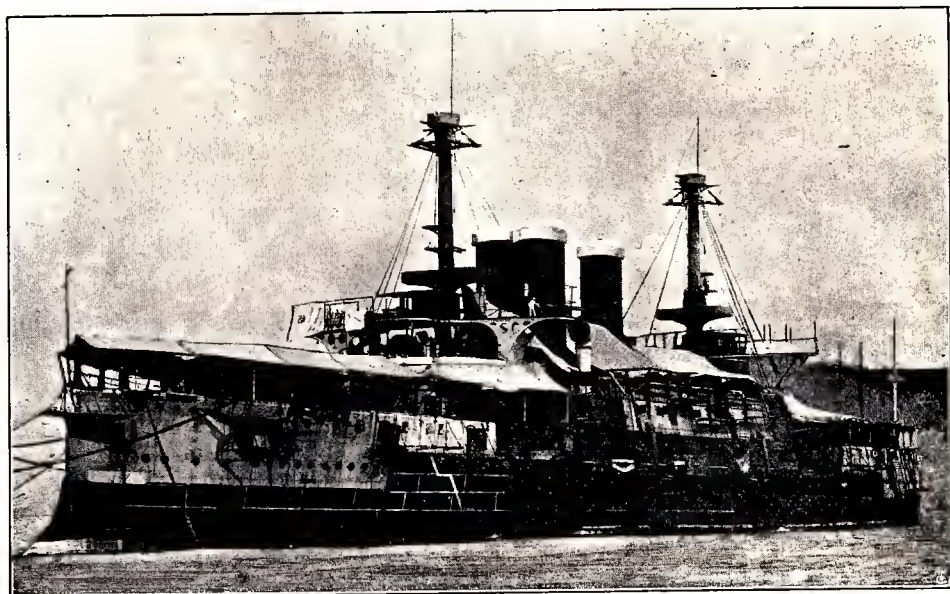
1900

Mikasa, a Vickers product at the turn of the century, the start of a long line of battleships which led to Japanese indigenous development which culminated in the design of *Yamato* and *Musashi*, the largest ever designed and built by any navy. See 1947-48 edition, Frontispiece: photograph and plan and elevation drawing and special 3-page descriptive supplement, page 429.



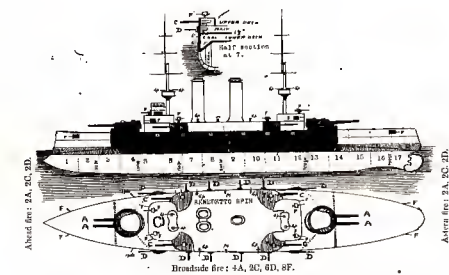
Benedetto Brin and *Regina Margherita*, typical products of the Italian naval constructors' art at the beginning of the 20th century.

1901



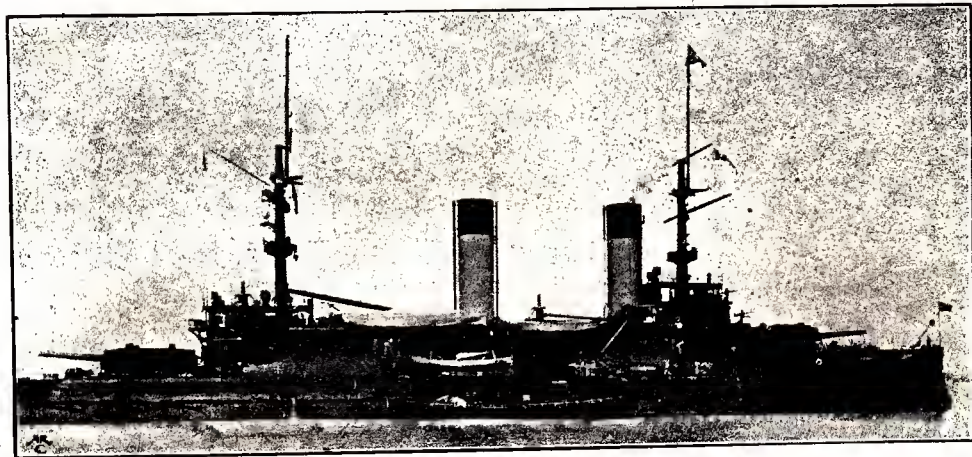
B. BRIN (building).

Photo by favour of M. de la Roche.

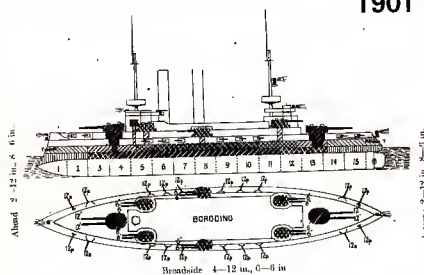


Borodino, the Russian battleship sunk by the Japanese in the Battle of Tsushima, 27 to 29 May 1905, gives a flashback to the Russo-Japanese War of over 60 years ago. It also recalls the attack on Port Arthur. This total surprise move from the Japanese was the first "Pearl Harbour"

1901



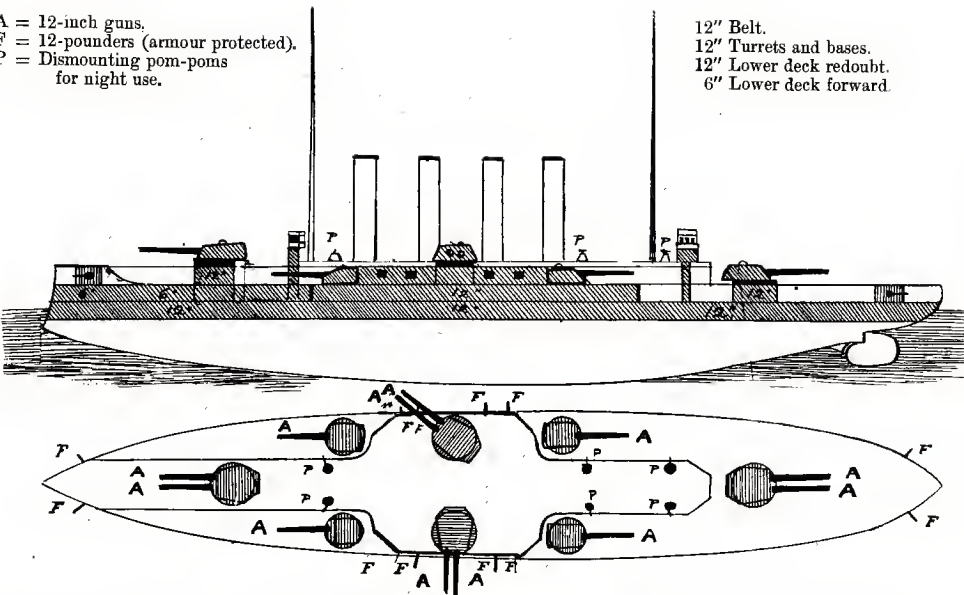
General Notes.—Completion hurried because of the war.
Borodino, *Imperator Aleksandr III.*, and *Kniaz Suvoroff*, **Sunk.** *Orel*, **now Japanese.**



A = 12-inch guns.
F = 12-pounders (armour protected).
P = Dismounting pom-poms for night use.

12" Belt.
12" Turrets and bases.
12" Lower deck redoubt.
6" Lower deck forward.

1903



AN IDEAL BATTLESHIP FOR THE BRITISH FLEET.

In the same manner the defensive and offensive power of the projected ships of the *Amalfi* class was harmonised with a form of hull of such high efficiency that it would have been possible to obtain a speed of 23 knots and probably more; but the statement that the problem could not have been solved with a displacement of much less or much greater tonnage than that projected, is not to be taken as insisting that the solution must be interpreted in a too absolute manner, asserting that the speed of 23 knots could not be efficiently obtained save with a displacement of from 8000 to 9000 tons, for this would be inexact.

* * * * *

possible for such and such a naval architect to design a special form of hull having a displacement of 17,000 tons, and with which we can realise a very high speed—24 knots, for example?

"Without doubt," will answer all practical naval constructors.

If we go further, and ask, Is it possible for him at the same time to arm such a vessel with twelve pieces of 12-inch?

"Without doubt," will answer but a certain number of such experienced men.

But if we go still further, and demand finally, Is it also possible for him to protect such a ship with 12-inch armour?

"Without doubt," will answer only one here and there, who may have already made researches in that direction.

And as the solving of such a problem necessitates many and many a calculation, and no amount of discussion or argument on the matter could in any way be conclusive unless based on definite plans and figures, these lines might well conclude here.

But, in deference to the courteous inquiry of Admiral Hopkins, this brief article must not be allowed to close in a manner so indefinite.

I would therefore say frankly at once that the designs for such a vessel have already been worked out, and that its construction seems quite feasible and attainable. Following up the progressive scale of displacements from 8000 to 12,000, and then on to 17,000 tons, a new *King Edward VII.* has been designed, 521½ feet (159 metres) in length, with a beam of 82 feet (25 metres), and mean draught of 27½ feet (8·5 metres); with the water-line protected with 12-inch plates, and the battery similarly armoured; having two turrets at the ends, each armed with a pair of 12-inch guns, and two central side turrets high up (similar to the two with 8-inch guns in the *Vittorio Emanuele III.*), also armed each with two pieces of 12-inch, and four turrets at the four angles of the upper part of the battery, having each one 12-inch gun.

This vessel has no ports whatever in her armour; she carries no secondary armament at all, but only the usual pieces of small calibre for defence against torpedo attack.

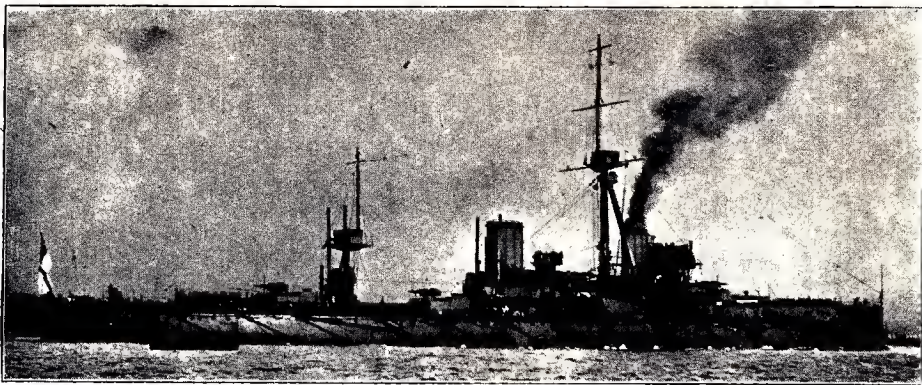
The speed to be realised, as proved by the tank trials, is 24 knots.

VITTORIO CUNIBERTI.

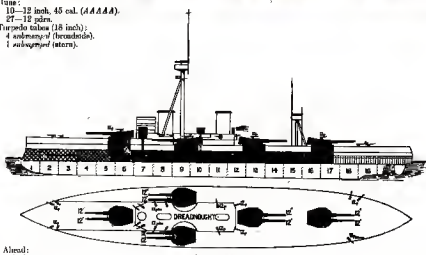
Vittorio Cuniberti's design for an ideal battleship for the British Fleet published in 1903 edition is generally believed to have inspired the design of the first all-big-gunned battleship, H.M.S. *Dreadnought* which was so revolutionary in concept that it rendered all other battleships obsolete.

H.M.S. *Dreadnought*, built in the record time of 10 months, Dec. 1905 to Oct. 1906, which gave her name as a category to a long line of super battleships built from then until the end of the First World War, and from the time of her appearance started among the leading powers a race to produce the most powerful ship of the type.

1906



(Guns: 10—12 inch, 45 cal. (AAAA).
27—12 pound.
Torpedo tubes (18 inch).
4 secondary (3 inch).
1 anti-aircraft (3 inch).)



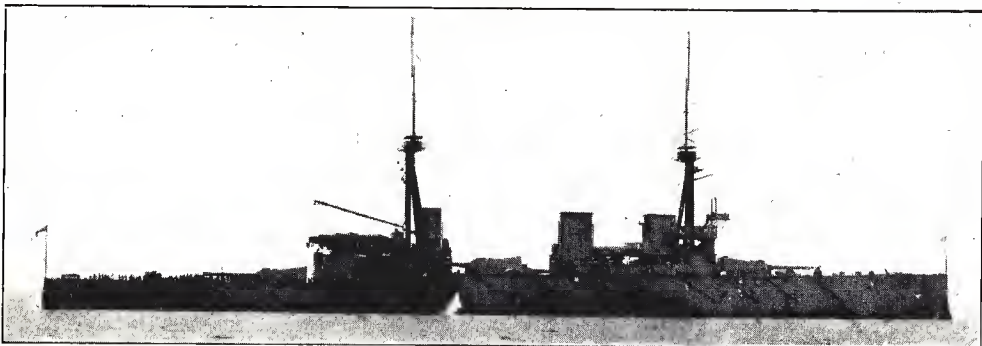
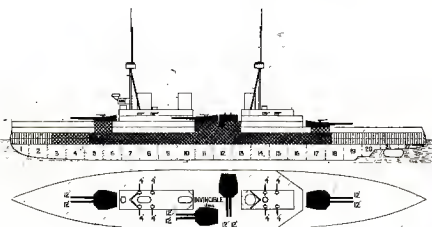
Armour: 6—12 in.

Breadth: 8—17 in.

Armour: 6—12 in.

1907

Indomitable and her class represent the prototypes of what later became known as battle cruisers, which were in essence dreadnoughts which sacrificed a certain amount of armour for more speed.



Swift was the first large ocean-going destroyer and the first leader, the precursor of a type later designed and developed as destroyer leaders. The ultimate evolution of this type is represented by the nuclear powered guided missile destroyer leader (frigate) *Truxtun* in the U.S. Navy, just completed and as big as a light cruiser.

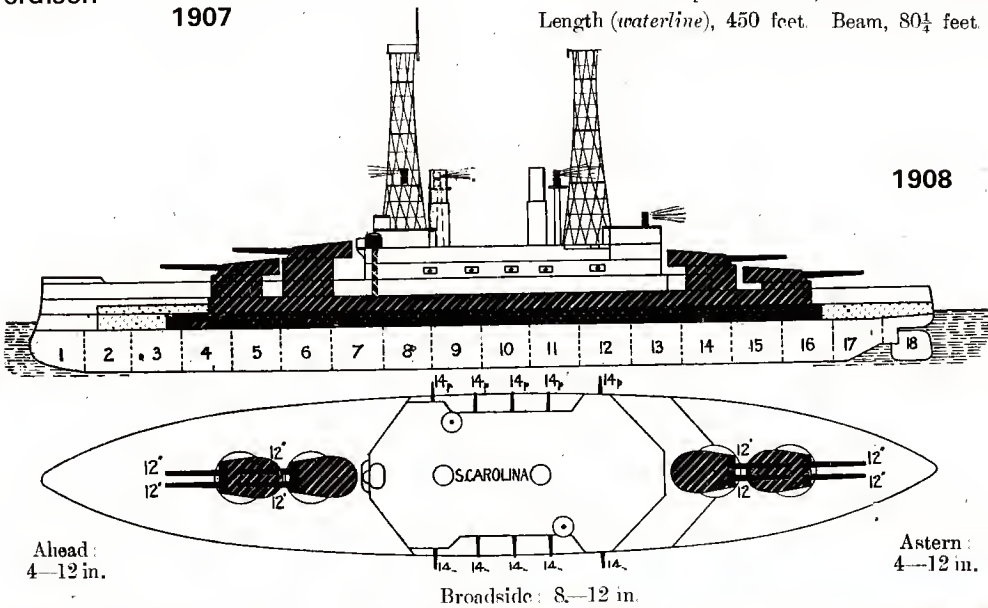


1 Laird.—*Swift* (1907). 1800 tons. Dimensions: 345×34½×10½ feet. Oil: 180 tons. H.P. 30,000=36 kts. Normand boilers. Armament: 4—4 inch (25 pdr.), 2—18 inch tubes. Cost about £280,500.

(S. CAROLINA CLASS—2 SHIPS).

SOUTH CAROLINA (1908), & MICHIGAN (May, 1908).

Normal displacement 16,250 tons. Full load displacement 17,650 tons. Complement 869.
Length (waterline), 450 feet. Beam, 80¼ feet. Mean draught, 24½ feet.



- Armour (Krupp):
12"—10" Belt (amidships).....aaa
11½" Belt (ends).....f
3½" Armour deck (slopes)
Protection to vitals.....=aaaa
10" Bulkheads.....aaa
12"—8" Turrets (N.C.).....aaa-a
10"—8" Turret bases (N.C.).....aa
10"—8" Lower deck, redoubt aaa-aa
12" Conning tower (N.C.).....aaa
9" tube.....aa
(about 4000 tons).
- Guns:
8—12 inch, 45 cal (A.A.A.A.).
22—3 inch, 14 pdr.
2—3 pdr. (semi-automatic).
8—1 pdr. (semi-automatic).
4—30 (automatic).
2 Field guns (3 inch).
Torpedo tubes (21 inch).
2 submerged
(Total about 1150 tons).

South Carolina was the first non-British all-big-gunned ship, the United States closely following in the wake of Great Britain with her *Dreadnought* and successors.

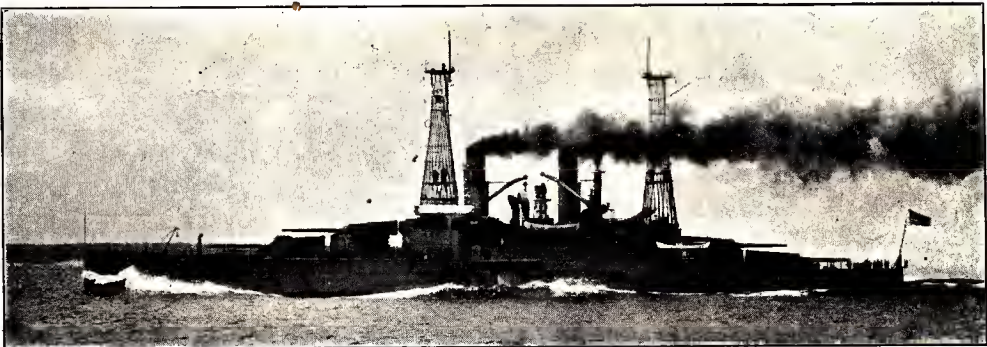
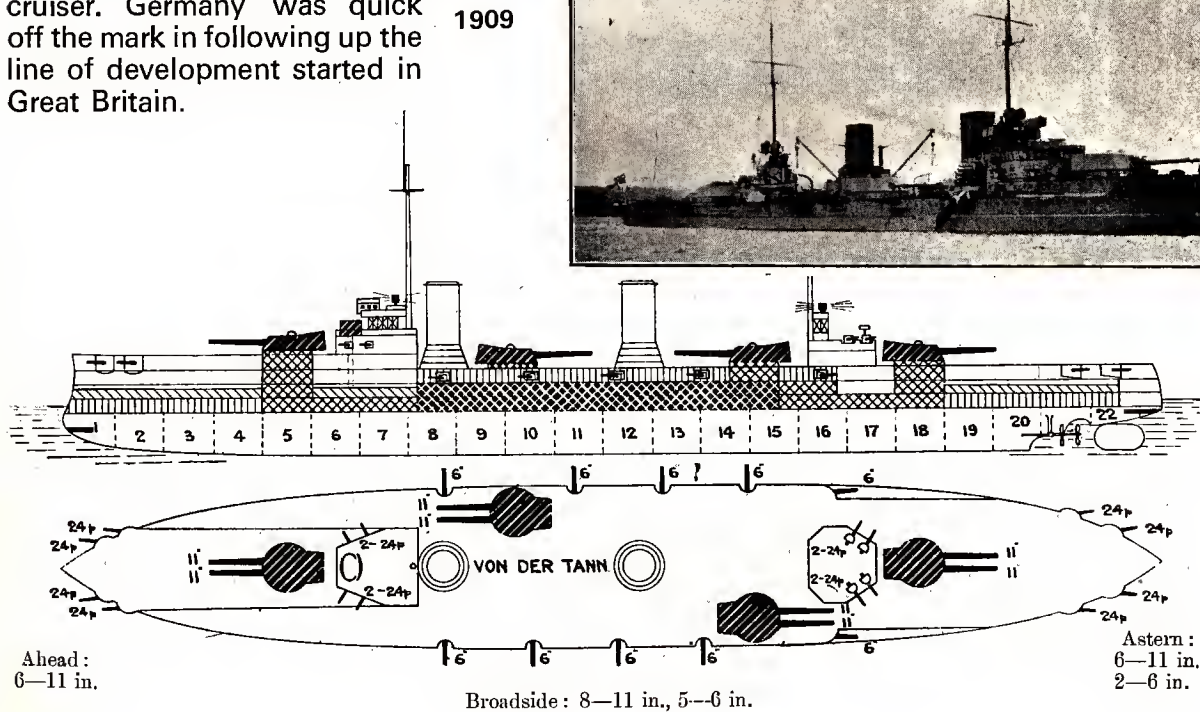
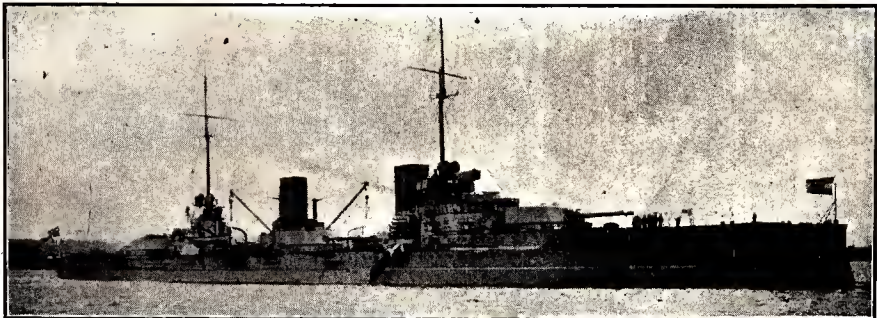


Photo by favour of Collier's Weekly. Copyright, Stebbins.

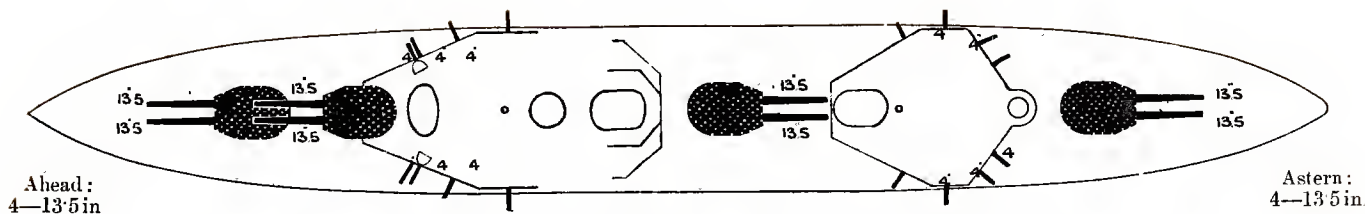
Similarly *Von der Tann* was the first non-British battle cruiser. Germany was quick off the mark in following up the line of development started in Great Britain.



1909

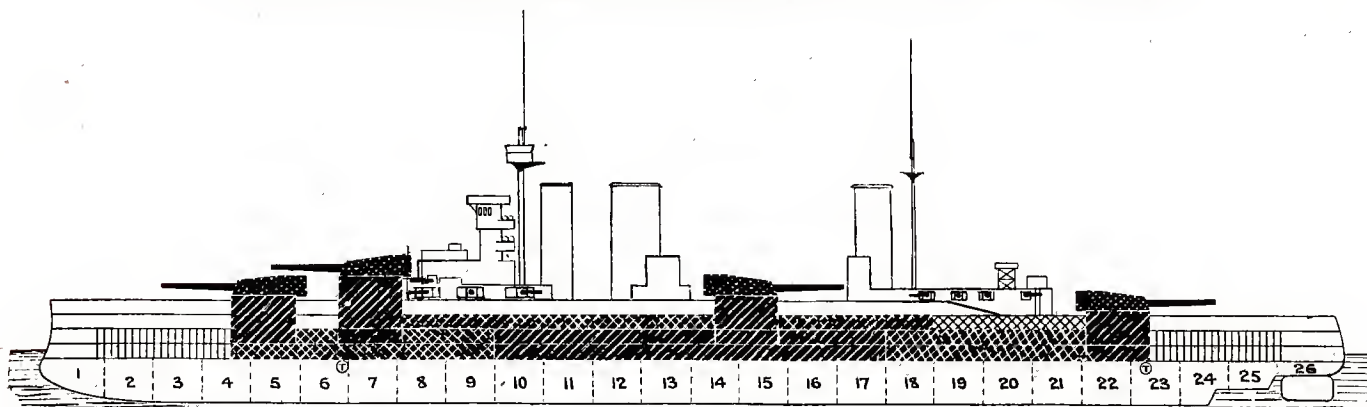


Astern:
6—11 in.
2—6 in.



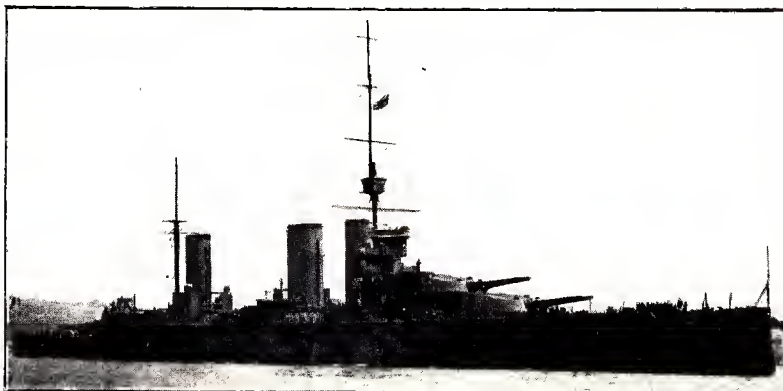
Engineering Notes.—*Lion* on trials used coal only. Speed by patent log. Max.=31.7 kts. Coal consumption was at rate of about 950 tons a day.

General Notes.—The *Lion* belongs to the 1909-10 Estimates; the *Princess Royal* is one of the "contingent Dreadnoughts" of the same year's estimates. On trials, flames from the fore funnel rendered the fire control station, then over fore funnel on tripod, most untenable. Alterations were consequently made.



- Guns:
- 8—13.5 inch (A⁷)
 - 16—4 inch.
- Torpedo tubes (21 inch):
- 2 submerged (broadside)
 - 1 " (stern)
- Armour (Krupp):
- 9" Belt (amidships) ... aa
 - 4" Belt (ends) d
 - 9' on big guns
 - 10" Conning tower.....

1910



Lion is a typical example of intermediate battle cruiser development. Vice Admiral (afterwards Admiral of the Fleet) Earl Beatty's flagship at the Battle of Jutland. There was some inherent fault in the design of the "Cats". When three battle cruisers blew up at Jutland, Beatty is said to have turned to his Flag Captain, afterwards Admiral of the Fleet Lord Chatfield, and said "There's something wrong with our damned ships today."

1912

"E" Class: direct successors of the original "Hollands", these boats were a very successful type which formed the backbone of the British submarine fleet in the First World War.



"E" CLASS.

Photo. Symonds & Co.

Leonardo da Vinci represents the Italian pre-war development of the Dreadnought concept and is especially interesting in view of Cuniberti's original scheme.

1911

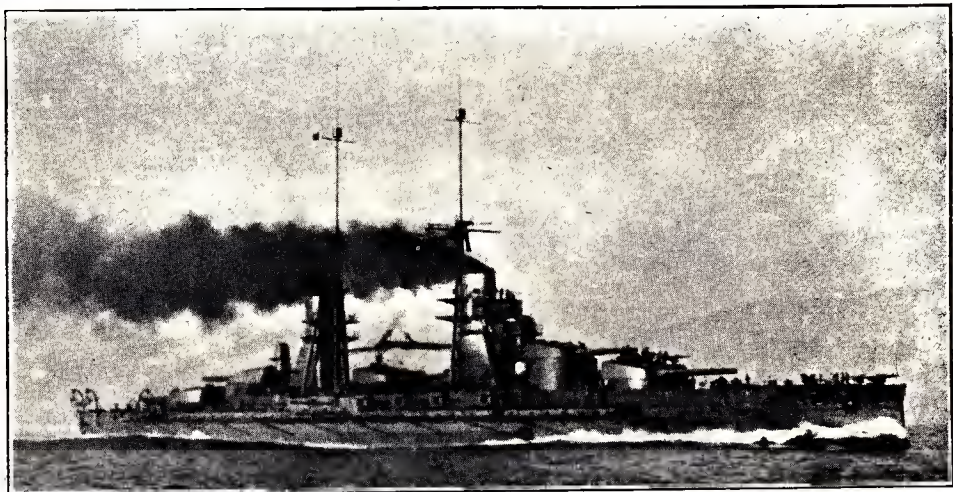
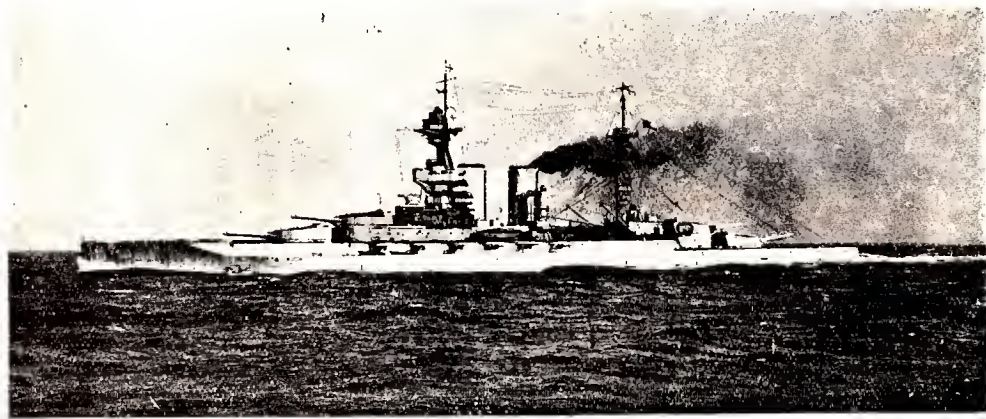
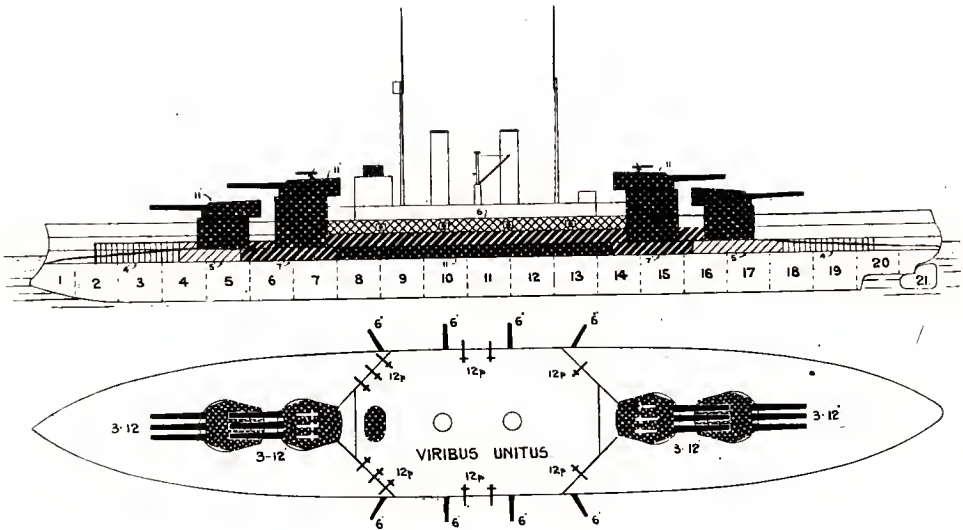


Photo by favour of C. de Gruze Sells, Esq.

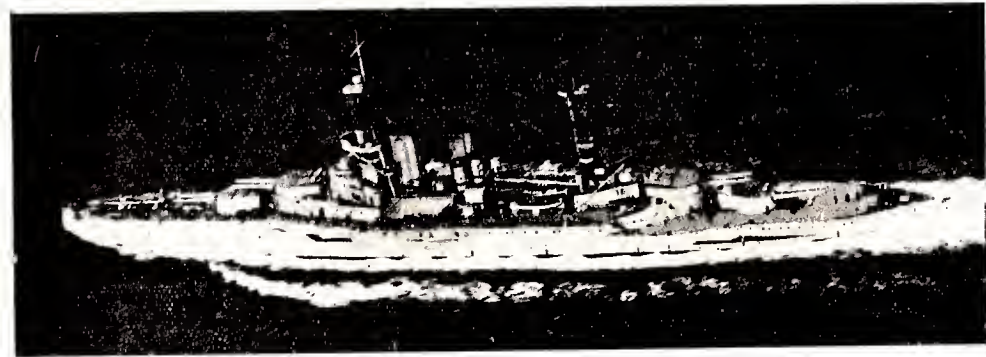
Viribus Unitis similarly presents the Austro-Hungarian idea of the Dreadnought type of battleship.

1911



QUEEN ELIZABETH.*

Photo, Graphic Union.



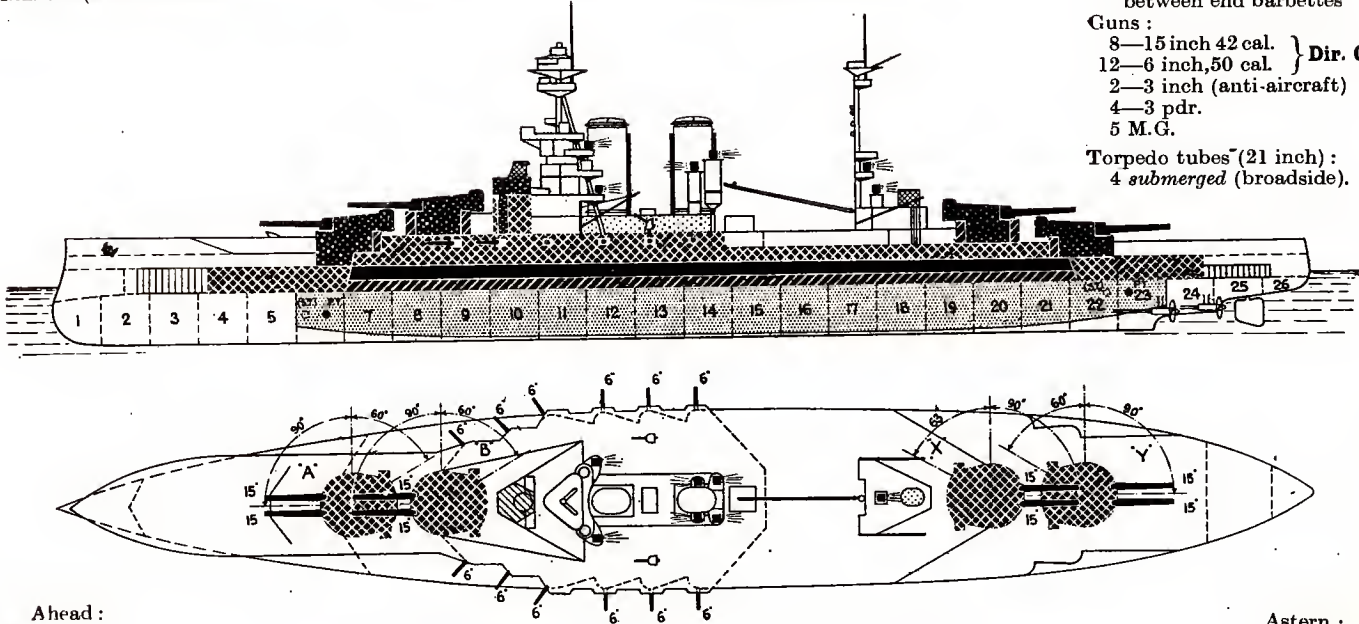
MALAYA (Aircraft view)

Official R.A.F. Photo.

The "Queen Elizabeth" class represented the ultimate development of the British Dreadnought battleship type. A most successful and handsome type which served over the span of the two great wars. Generally considered to be the finest battleship design.

1913

- | | | |
|--------------------------|----------------------------|-------|
| Vertical. | Armour (K.C.): | |
| | 13" Lower belt | |
| | 6"—4" Upper belt | |
| | 6"—4" Belt (ends) | |
| | 6", 4" Bulkheads (f. & a.) | |
| | 6" Battery | |
| | 10"—7" Barbettes | |
| | 11" Gunhouses | |
| | 1½" Funnel uptakes ... | |
| | 6"—3" C.T. base | |
| Deck. | Armour (H.T.): | |
| | 1" Fo'xle (over battery) | |
| | 2"—1½" Upper | |
| | 1½" Main | |
| | 1" Middle | |
| | 3" (ends) | |
| | 1" (amidships) | Lower |
| | Special Protec.: | |
| | 2"—1" Internal citadel | |
| | between end barbettes | |
| Guns: | | |
| 8—15 inch 42 cal. | } Dir. Con. | |
| 12—6 inch, 50 cal. | | |
| 2—3 inch (anti-aircraft) | | |
| 4—3 pdr. | | |
| 5 M.G. | | |
| Torpedo tubes (21 inch): | | |
| 4 submerged (broadside). | | |

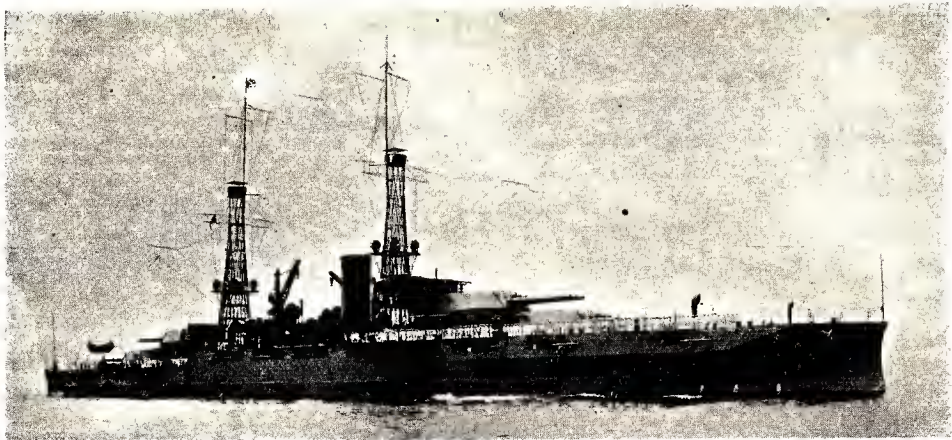
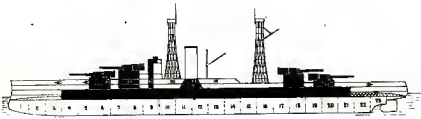


Ahead:
4—15 in.
3 to 6—6 in.

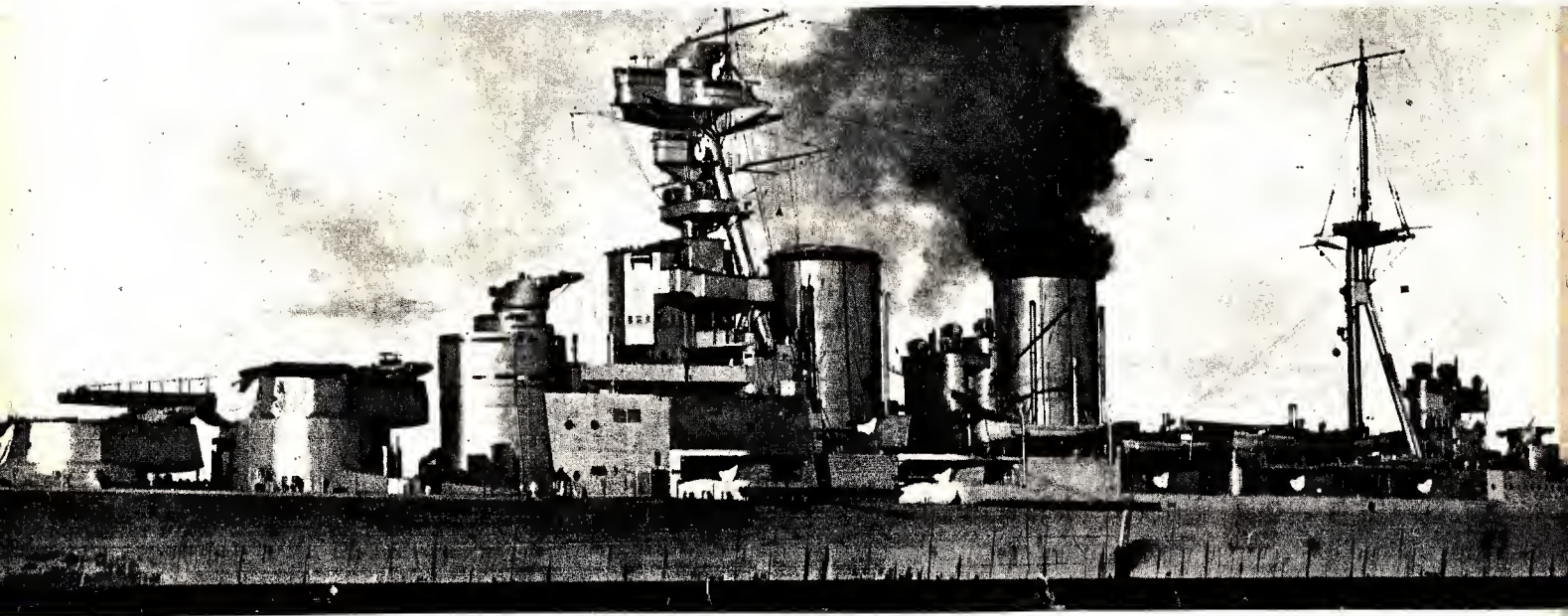
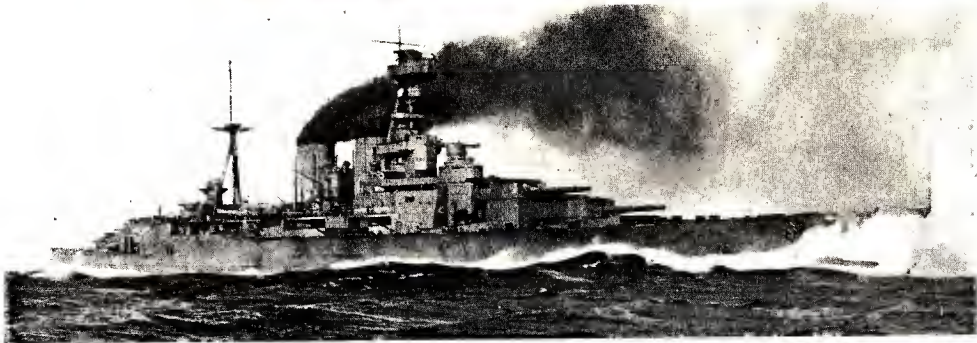
Broadside: 8—15 in., 6—6 in., 2—21 in. tubes.

Astern:
4—15 in.

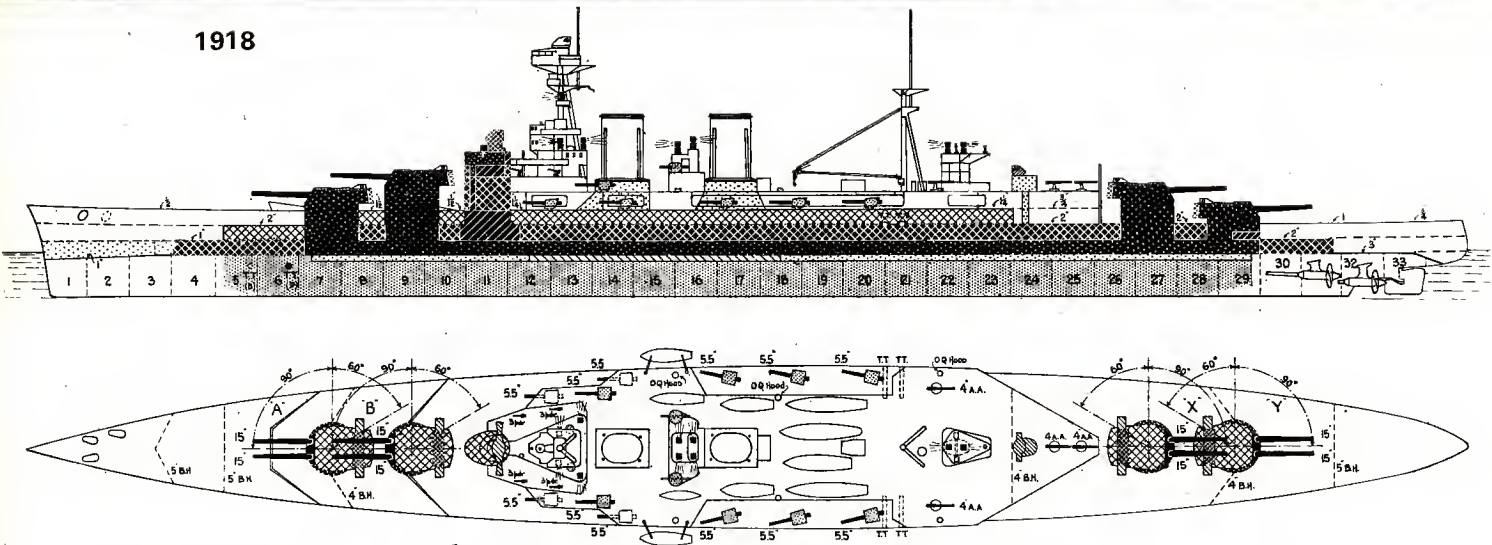
The United States contemporaries of the British "Queen Elizabeths" were *Pennsylvania* and *Arizona*, which, taken all round, represented one of the most successful Dreadnought designs of their day.



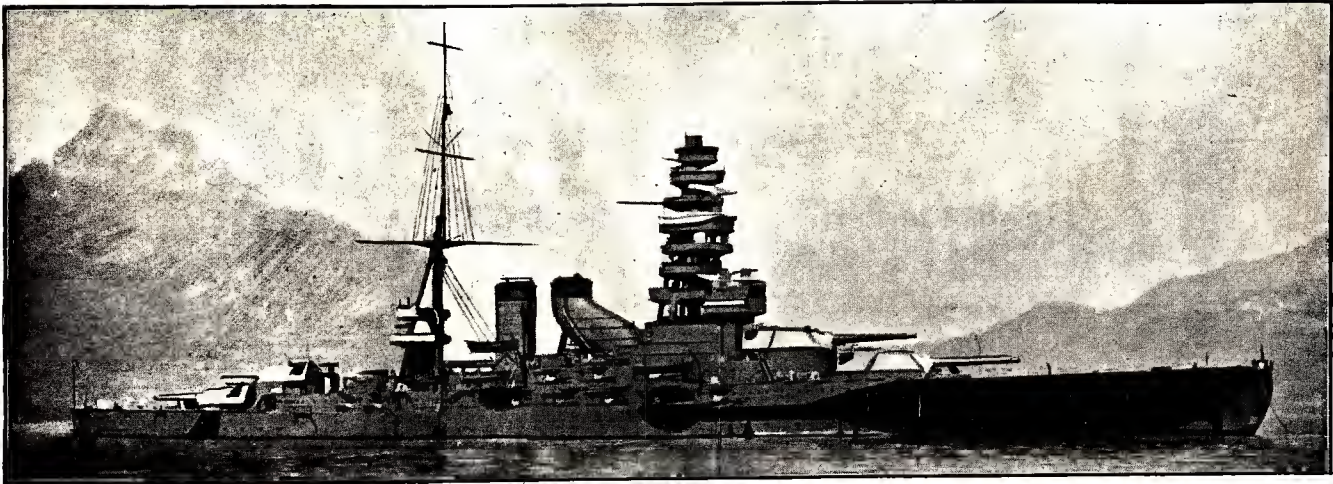
1915



1918



H.M.S. *Hood* was generally considered to be the most handsome warship extant, and one of the most powerful. But like most of the battle cruisers she apparently had a magazine-seal fault, and after epitomising the acme of British sea power for over twenty years between the wars, she was blown up in action with the German battleship *Bismarck* on 24 May 1941.

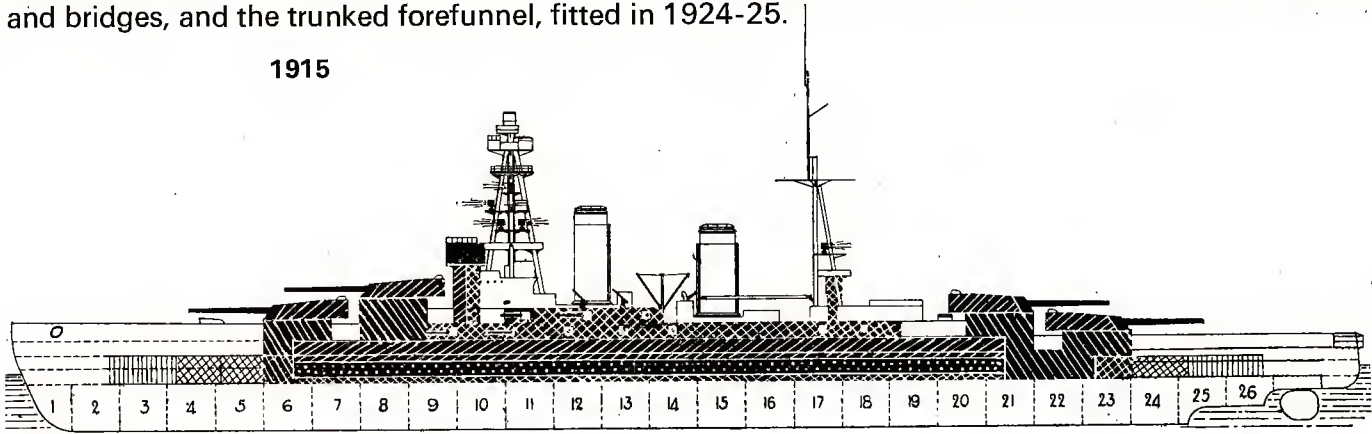


MUTSU.

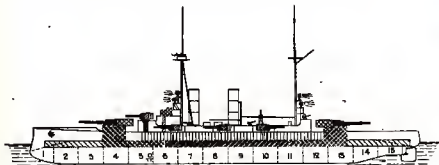
1925 Photo, by courtesy of the Navy Department, Tokyo.

Nagato was the first battleship in the world to be completed with 16-inch guns. But the outstanding feature as far as her architecture was concerned was the colossal heptapodal foremast with its numerous tops and bridges, and the trunked forefunnel, fitted in 1924-25.

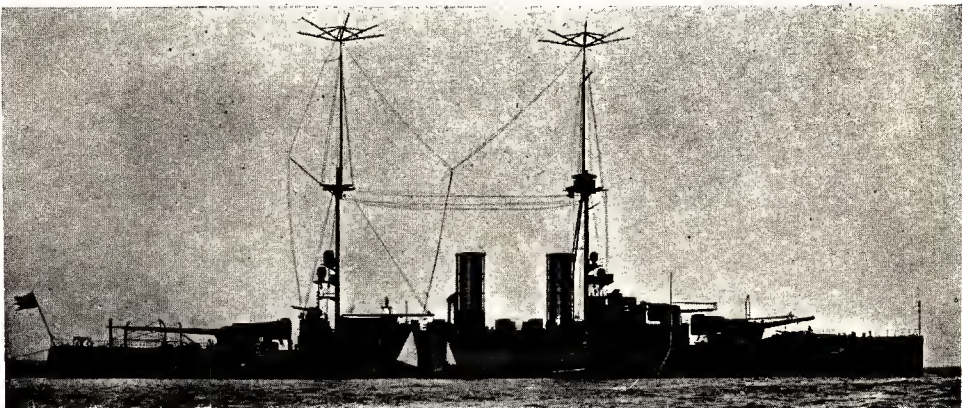
1915



The "Sverige" type of coast defence battleship was peculiar to Sweden who made no attempt to emulate the Dreadnought building powers but constructed "capital ships" to her own requirements.



Broadside : 4-11 inch, 5-6 inch.

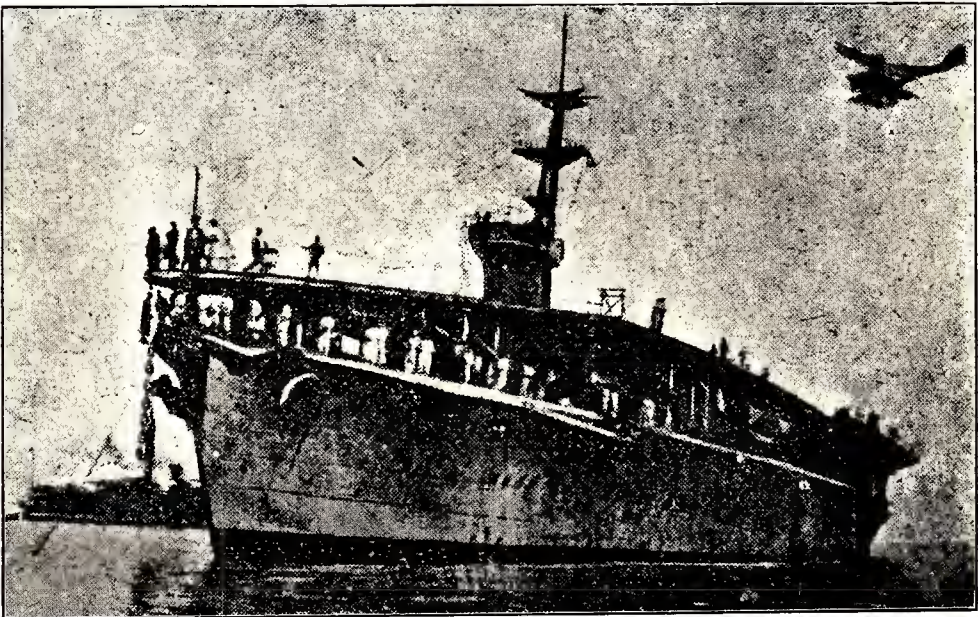


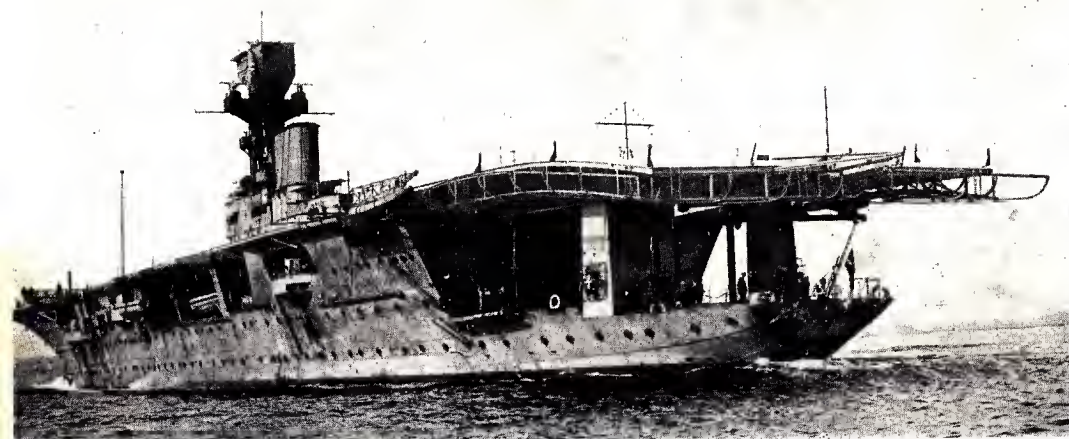
D. VICTORIA,
GUSTAF V.

1921 Photo, by courtesy of the Ministry of Defence.

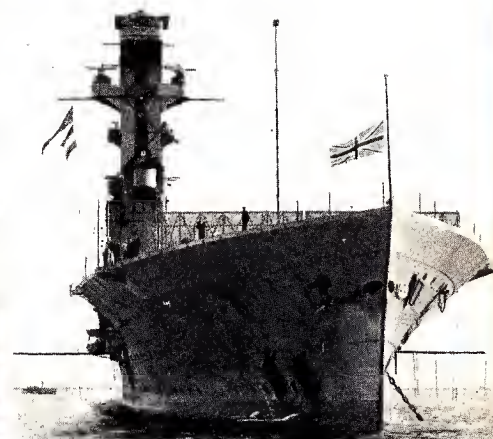
1921

Hosho, a good example of a quart in a pint pot. The Japanese contrived to carry 26 sea-planes on a platform of 9,500 tons.



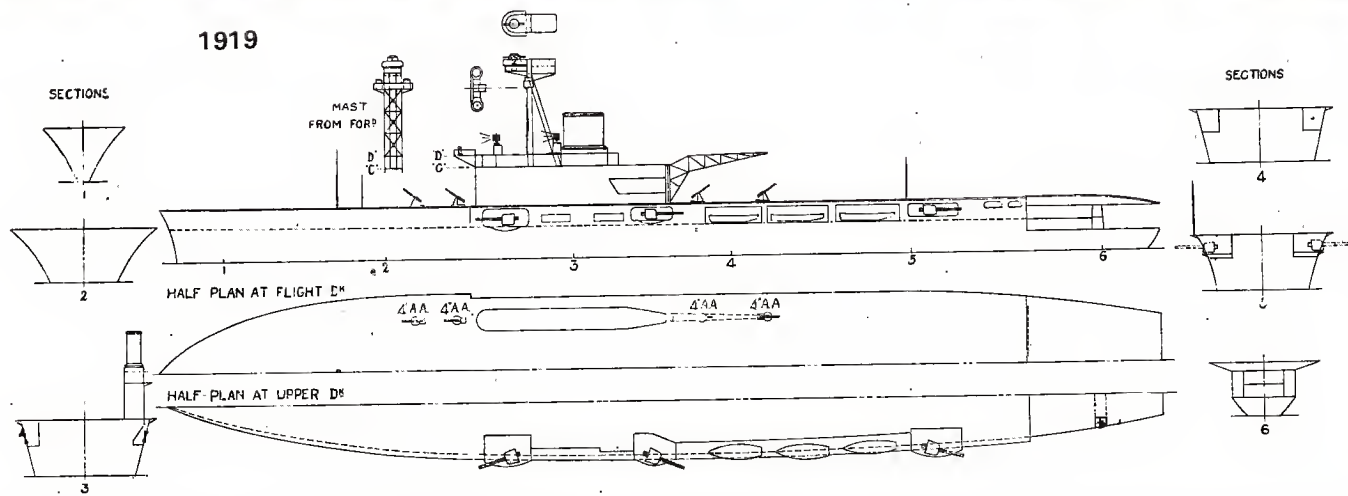


HERMES (port quarter).

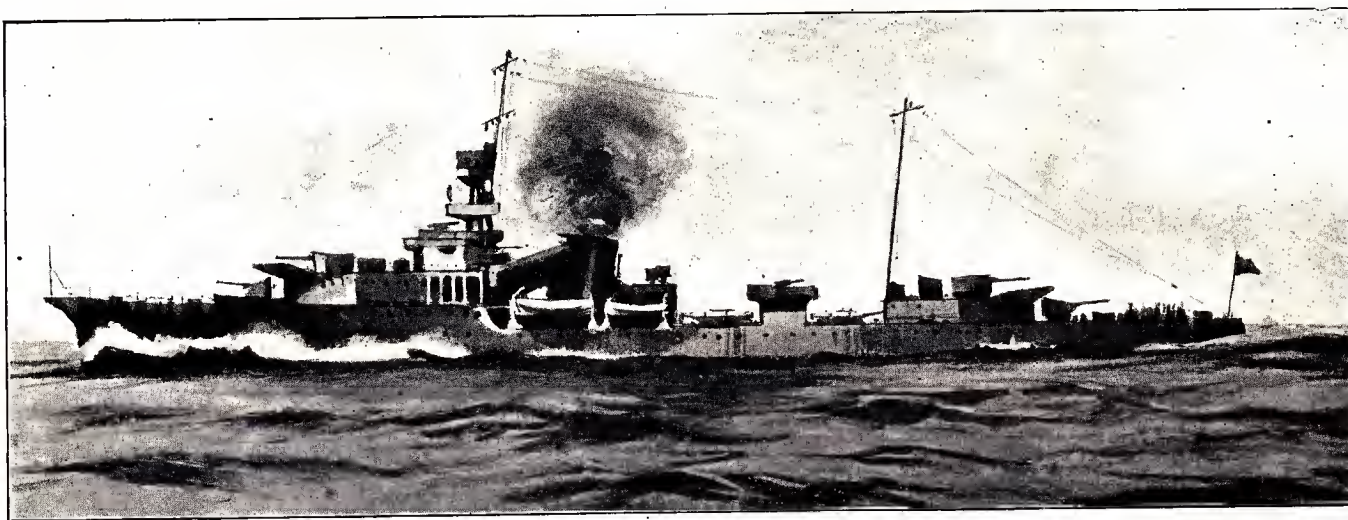


HERMES (bow view).

1923 Photo Abrahams



Hermes was the first vessel specially designed by the British Admiralty as an aircraft carrier, and she was, with various conversion ships, one of the forerunners of the aircraft carrier finally evolved to a satisfactory design before the Second World War.

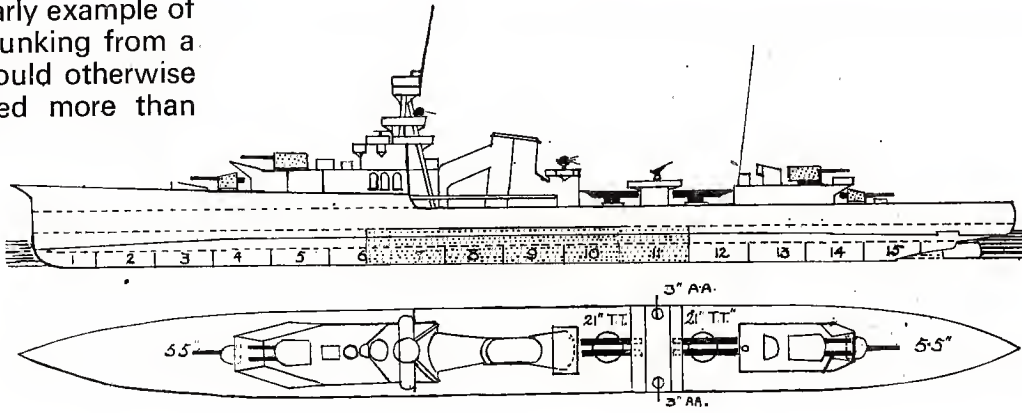


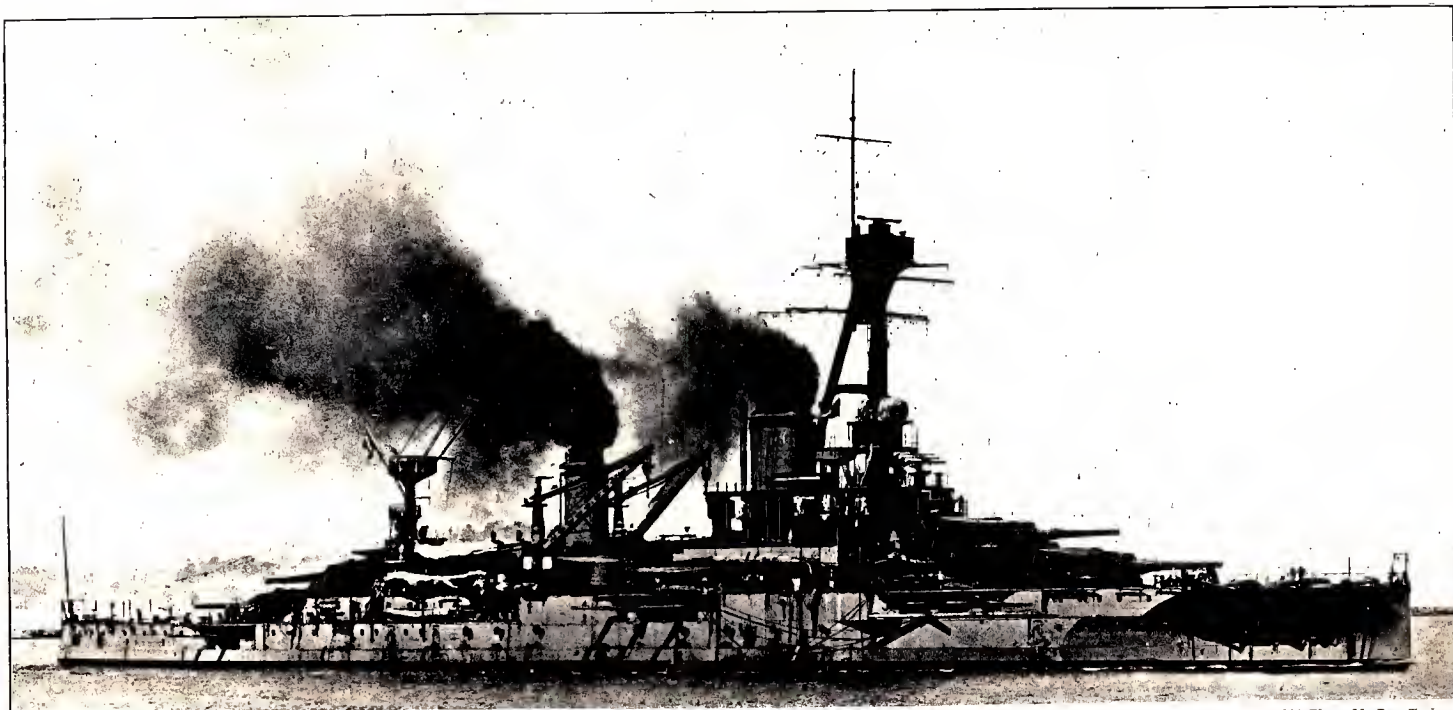
YUBARI

1923

Drawn by Oscar Parkes, 1924.

Yubari is an early example of funnel uptake trunking from a layout which would otherwise have necessitated more than one funnel.



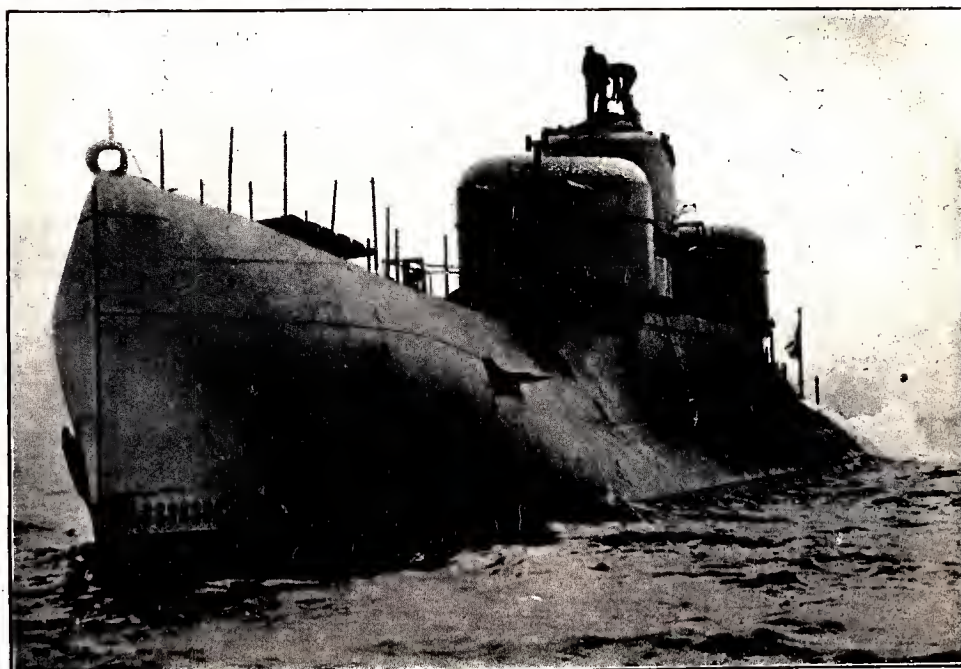


COURBET.

1924 Photo, M. Bar, Toulon.

The *Courbet*, *Jean Bart* and *Paris* represent the French conception of the Dreadnought battleship. This particularly fine picture was Frontispiece of the 1924 edition.

1911



X1.

1926 Photo, Cribb, Southsea.

1923

The submarine X1, the largest then in the British Navy was widely publicised at the time as the first "underwater cruiser". Since then, of course, much larger submarines have been built.



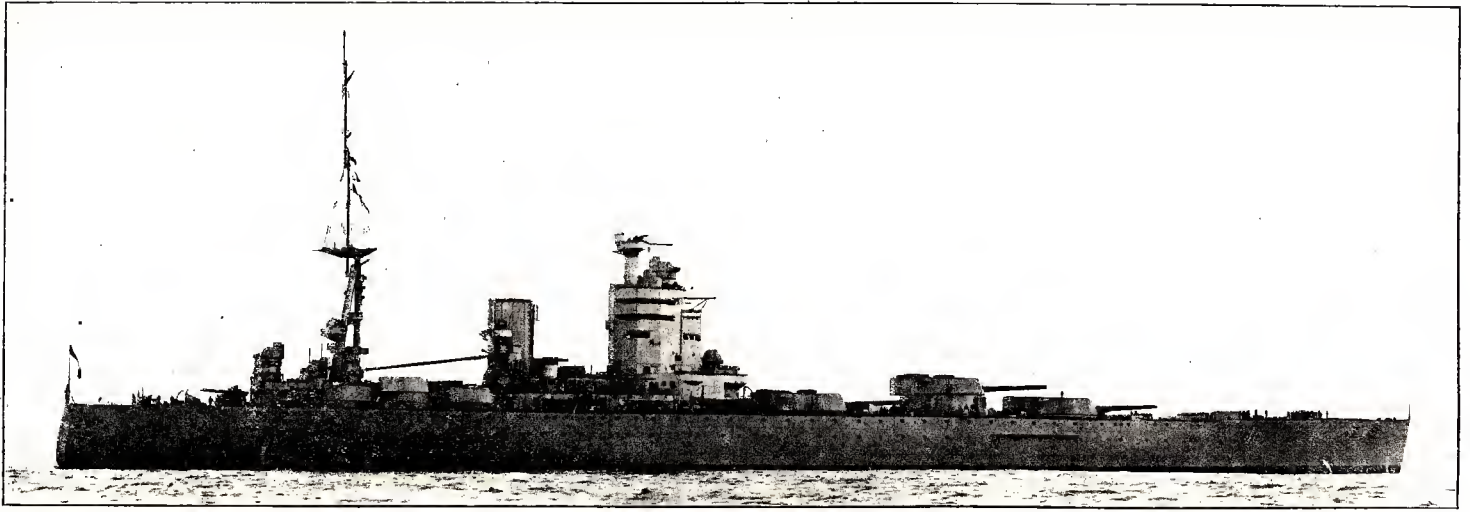
1924

Tigre was typical of the French independent line of thought in naval architecture. They were destroyer flotilla leaders with a decided light cruiser look.



TIGRE.

1926 Photo, M. Bar, Toulon.



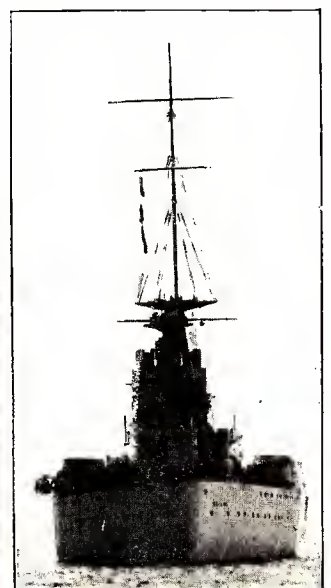
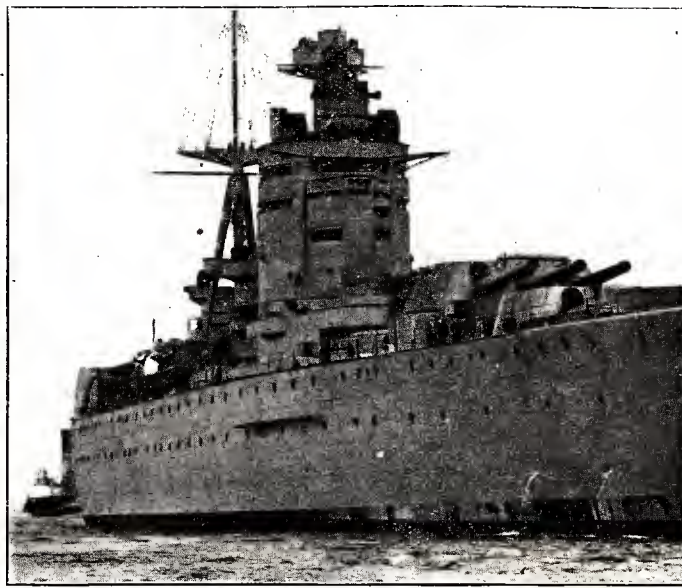
NELSON.

(NELSON CLASS.)

NELSON (September 3rd, 1925), **RODNEY** (December 17th, 1925).



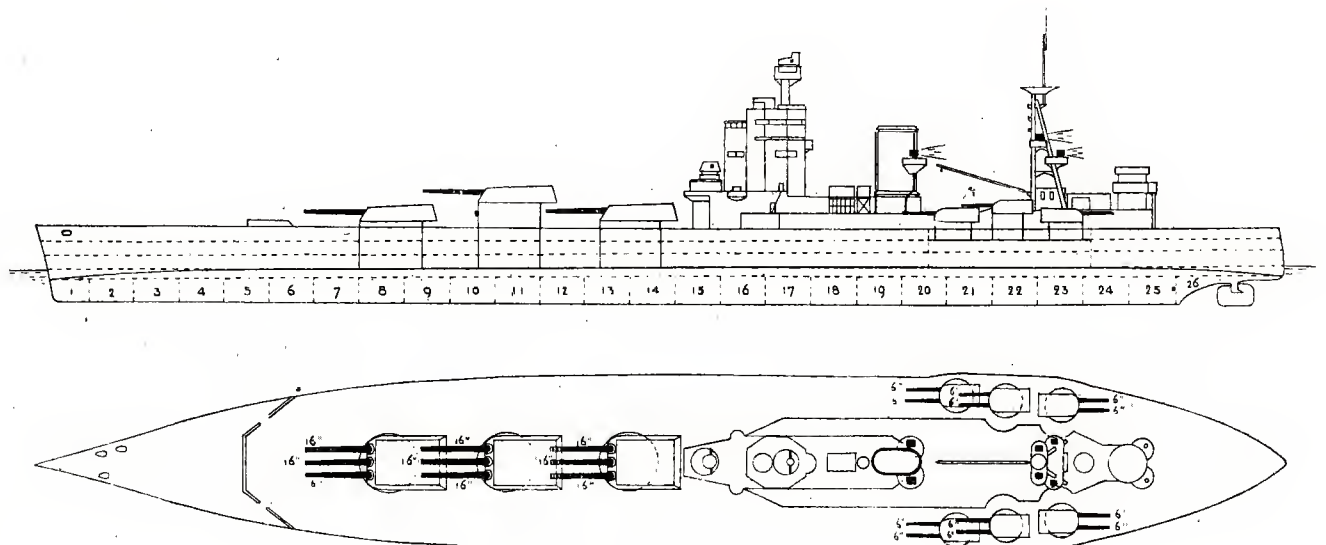
Bow view.

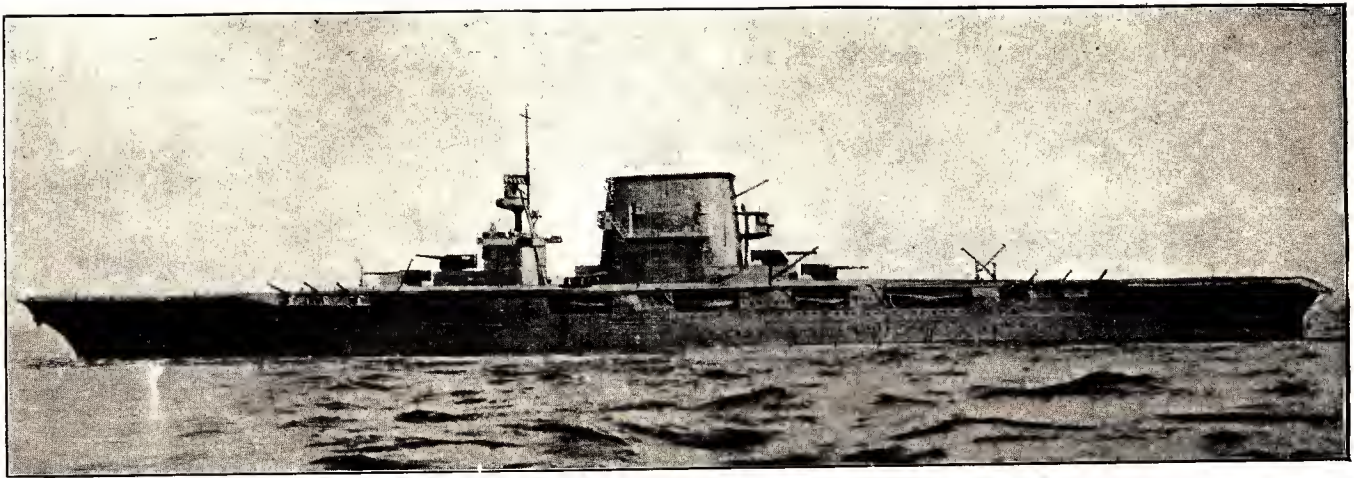


Stern view.

1925

Nelson and *Rodney* were the first post-First World War-built battleships and had a sawn-off appearance aft, as they were built under Treaty limitations and the main triple turrets which would have been distributed to allow one aft in the originally designed much bigger ships were all three grouped forward.

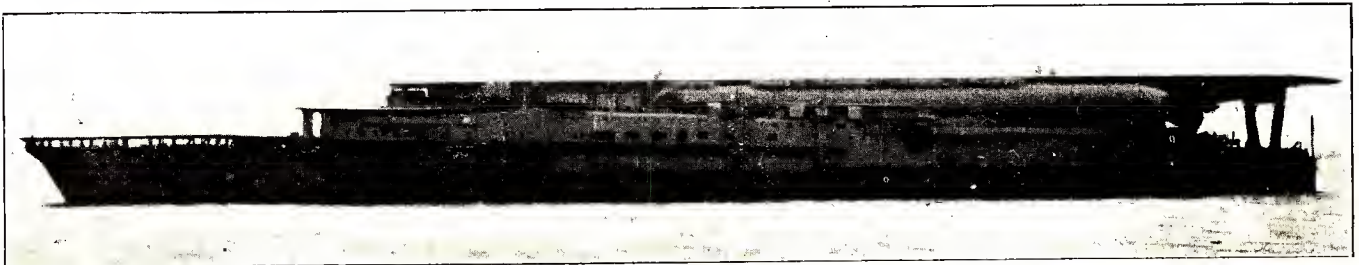
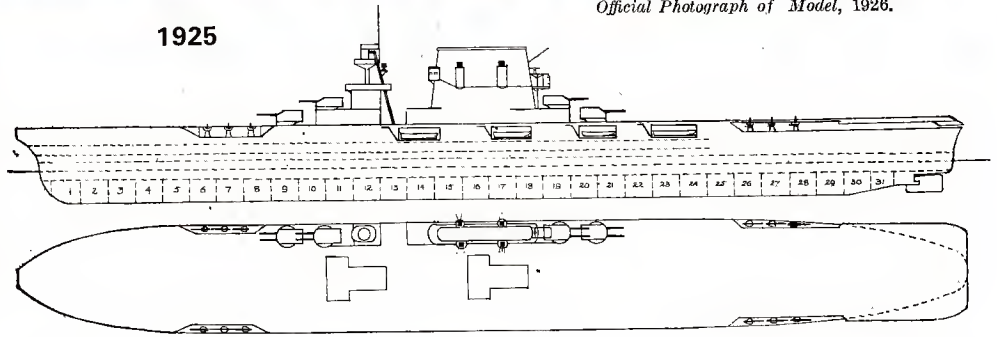




Official Photograph of Model, 1926.

Lexington and *Saratoga* were originally designed as battle cruisers with *seven* funnels and boilers disposed on two deck levels, which accounts for the massive funnel, probably the biggest ever, in the ships when they were recast as aircraft carriers.

1925

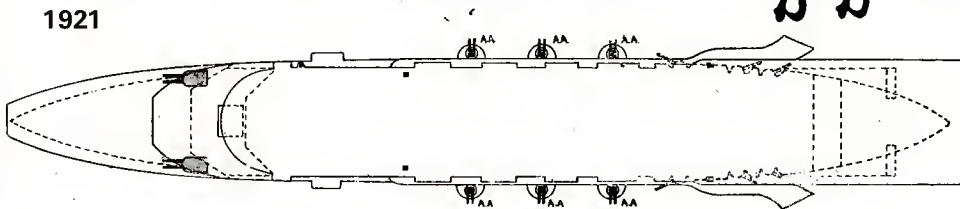


KAGA.

1929 Photo.

1921

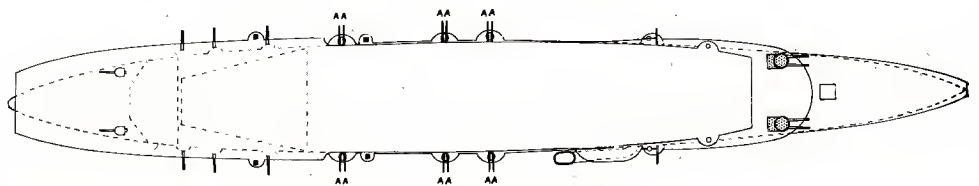
かか KAGA



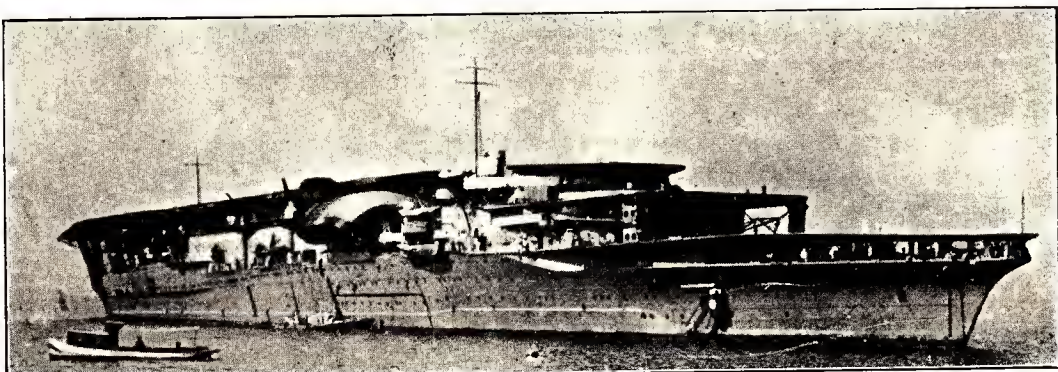
Kaga, originally laid down as a battleship, was converted into an aircraft carrier as the result of the Washington Treaty. All these experimental conversions led the way to vessels built from the start as aircraft carriers.

ぎかあ AKAGI

Japan had parallel ideas when *Akagi*, originally laid down as a large battle cruiser, was likewise converted into an aircraft carrier as a result of the Washington Treaty.



1925



AKAGI.

1929 Photo, Enseigne de Vaisseau Laforgue.

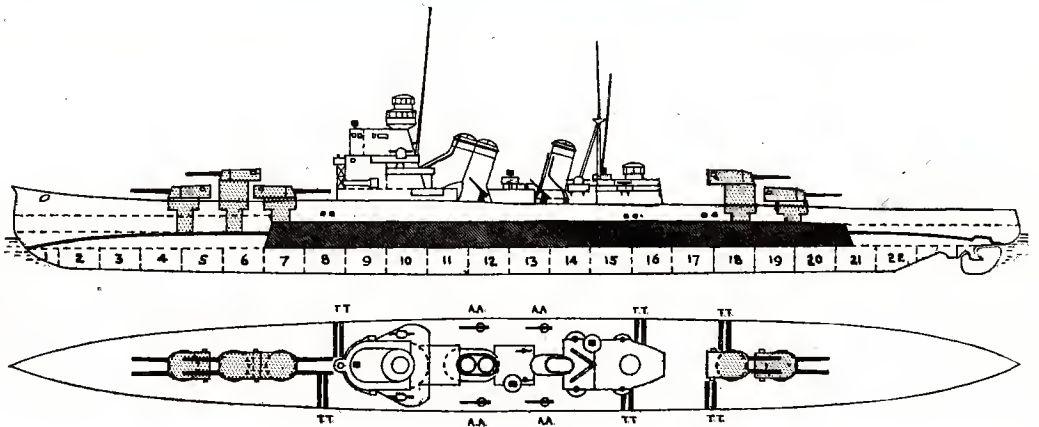


NACHI.

1929 Photo.

1927

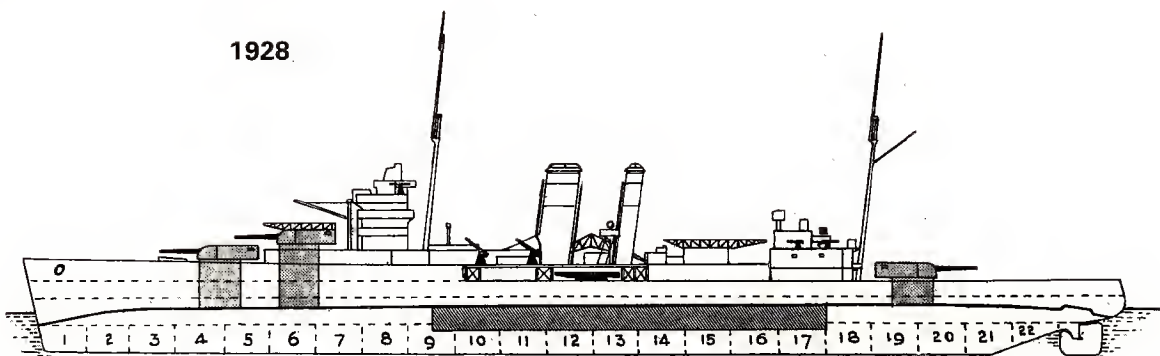
The "Nachi" class were first class cruisers typical of Japanese naval architecture. They had a triple hull designed to give the greatest possible protection against submarines.



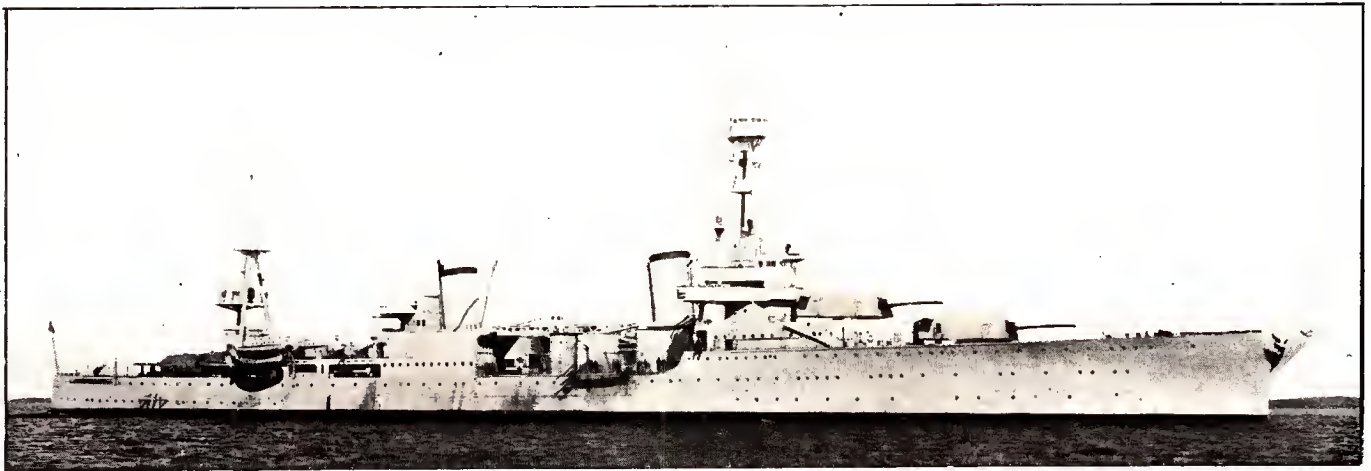
YORK

1930 Photo, Cribb

1928



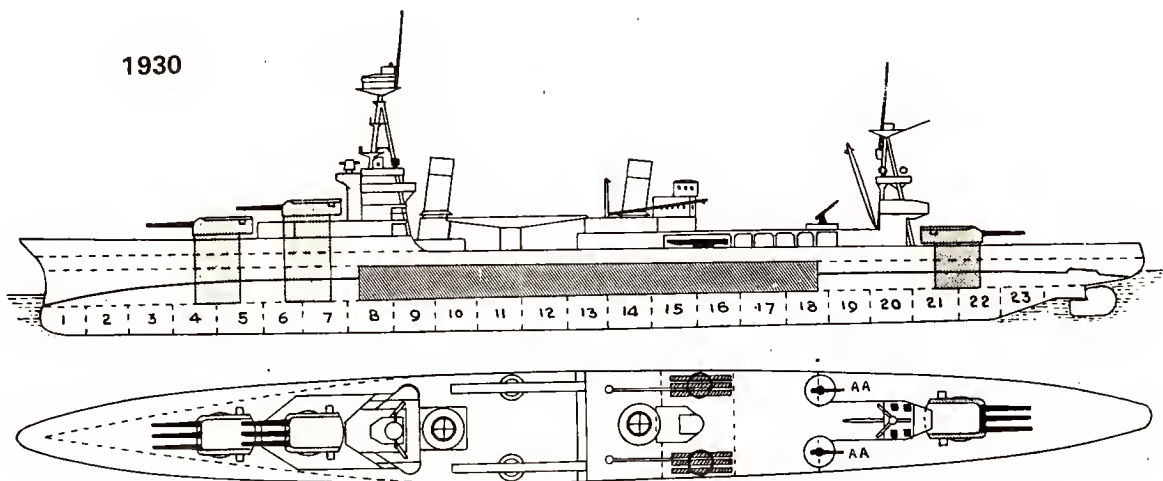
York marked the first attempt on the part of one of the Treaty Powers to break away from the 10,000 ton type of cruiser, but two 8-inch guns had to be sacrificed to get the ship down to a handy 8,400 tons.



NORTHAMPTON.

1930 Official Photo.

The "Augusta" class were a "production" type typical of the cruisers built by the United States between the wars.



1929



FRENCH SUBMARINE CRUISER "SURCOUF"

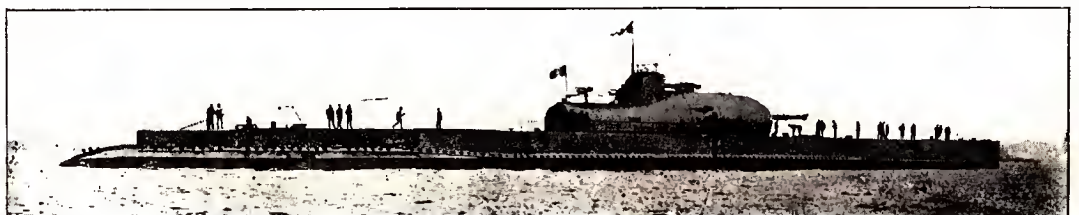
1931 Photo, Official



Completed 1931.

- Guns : 2—8 inch (203 mm.)
2—37 mm. AA.
4—M.G.
- Tubes : 14—21.7 inch (550 mm.)
22 Torpedoes carried.
- Compl. : 150.
- Radius : 10,000 miles at 10 kts.

Notes:—Is the largest submarine in the world, representing an experimental type not likely to be repeated. Designed as a corsair and carries the largest guns allowed by the Treaty. Is to carry a small seaplane. Can dive in 2 minutes. The Torpedo armament appears to be disposed as follows : 6 in bows, 8 in 2 sets of training tubes aft.



Surcouf always described at the time as "cruiser type", was then the largest submarine in the world. But she represented an experimental type not likely (and not in fact) repeated. Carried 8-inch guns, the largest allowed by the Treaty. Also designed to carry a small seaplane.

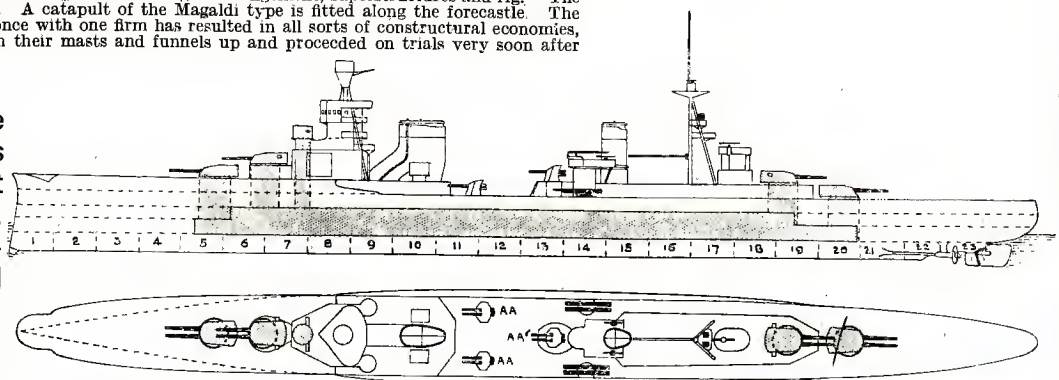


ALBERTO DI GIUSSANO on trials, making 40.7 kts. Sept. 1930.

1930

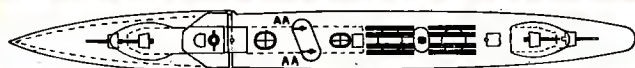
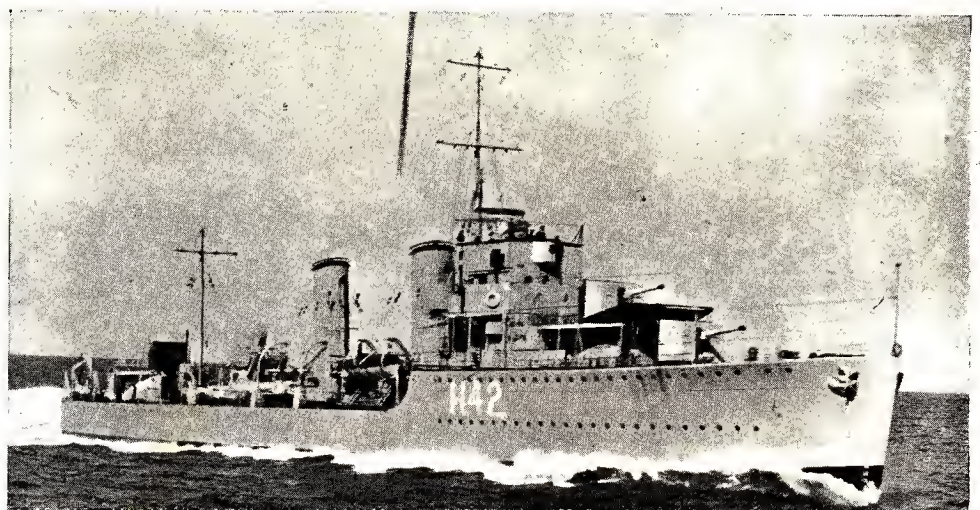
General Notes—This class have been built as a reply to the French destroyers of the *Lion* type, over which they have every advantage. They represent an extraordinary efficient and novel type of cruiser which is capable of overtaking the fastest destroyer. On trials the *A. di Barbiano* reached 42.04 knots at 5,607 tons, and maintained 39.74 knots for 8 hours with her full armament aboard. (Dec., 1930). Their appearance is particularly striking, as they present the profile of a battleship, with their lofty bridgework, squat funnels, and general sense of aggressiveness. The original design has been somewhat modified as regards the AA gun arrangement, superstructures and rig. The present fire control top is 95 feet over water. A catapult of the Magaldi type is fitted along the forecabin. The policy of placing an order for three ships at once with one firm has resulted in all sorts of constructional economies, and the Ansaldo ships were all launched with their masts and funnels up and proceeded on trials very soon after taking the water.

Alberto di Giussano was one of the remarkable light cruisers of the "Condottieri" class built as a reply to French destroyers. They represented an extraordinarily efficient and novel type of cruiser. Their appearance was particularly striking, presenting the profile of battleships and a general air of aggressiveness.



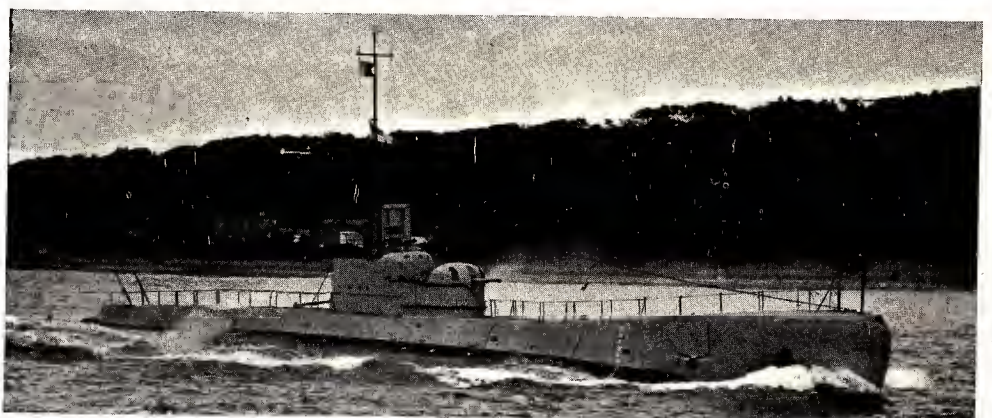
1929

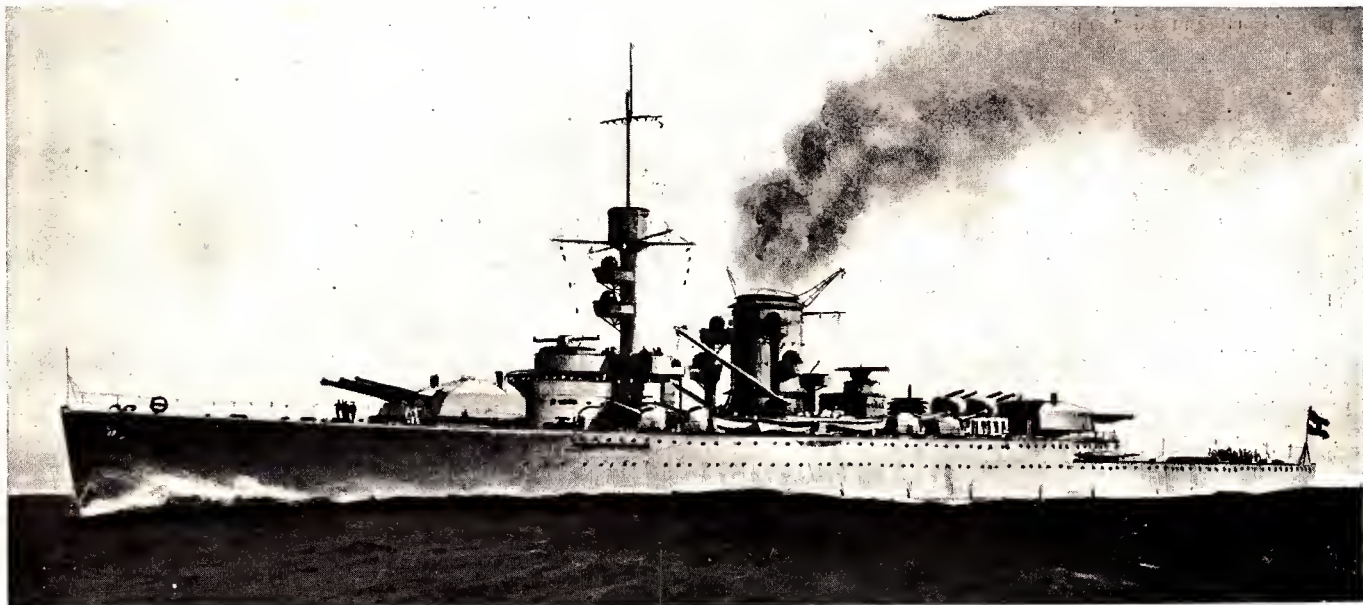
The "Acasta" class started the many flotillas of destroyers which were turned out between the wars, and built on a fairly standard pattern proved their worth in war emergency.



1930

Thames was one of the bigger and faster submarines built for the British Navy in the 30's. The only one of her type, though *Clyde* and *Severn* were regarded as near-sisters.





BATTLESHIPS, rated as ARMoured SHIPS (Panzerschiffe).

Battleships—GERMANY

Battleship—Special Note.—Establishment permitted by Treaty: 6 in Commission, 2 in Reserve. Age Limit: 20 years. Not to be replaced by ships of more than 10,000 standard tons displacement.

DEUTSCHLAND (Laid down at Deutsche Werke, Kiel, September, 1923). Launched May 19th, 1931. To be completed Spring 1933.

Ersatz **LOTHRINGEN** (Laid down Wilhelmshaven, June 23th, 1931. To be completed 1934.

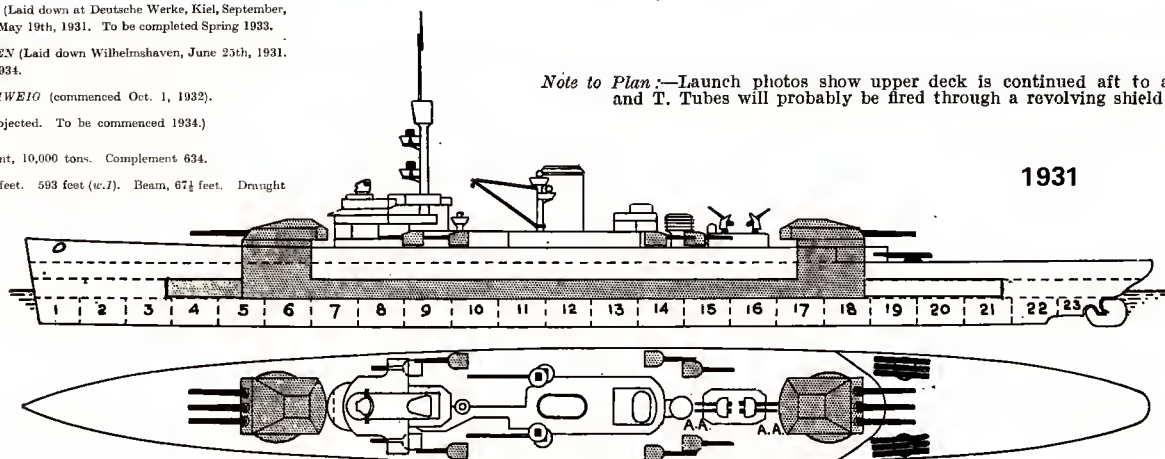
Ersatz **BRAUNSCHWEIG** (commenced Oct. 1, 1932).

Ersatz **ELSASS** (projected. To be commenced 1934.)

Standard displacement, 10,000 tons. Complement 634.

Length, 609½ (o.a.) feet. 593 feet (w.l.). Beam, 67½ feet. Draught 21½ feet.

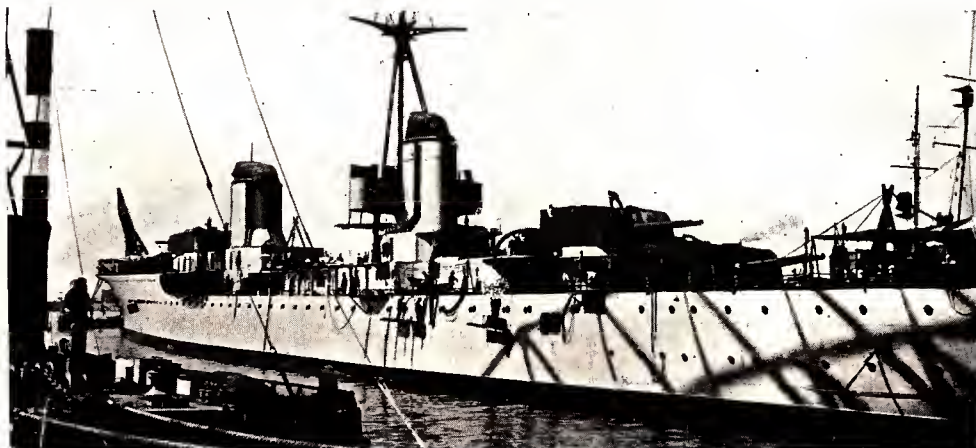
Note to Plan:—Launch photos show upper deck is continued aft to about section 20, and T. Tubes will probably be fired through a revolving shield as in *Hessen*.



1931

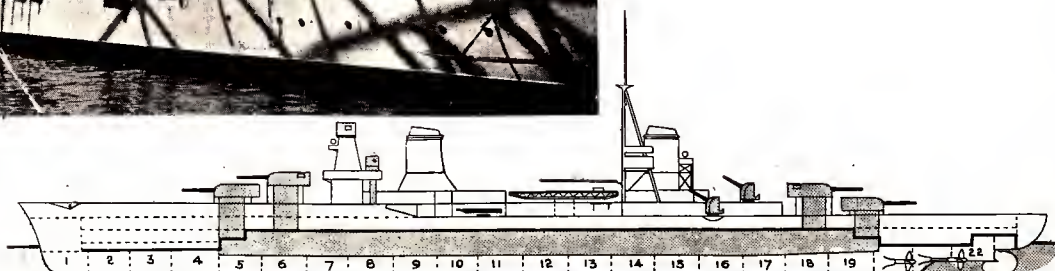
(Plan furnished by courtesy of the Naval Staff, Berlin, 1929.)

Deutschland was the first of the trio of notorious German "Pocket" Battleships. They were officially rated as "Armoured Ships", but were actually equivalent to armoured cruisers of an exceptionally powerful type, although they packed a battle cruiser punch.



Montecuccoli and *Muzio Attendolo* represented a variation of the "Condottieri" class and were known as the "C" Type.

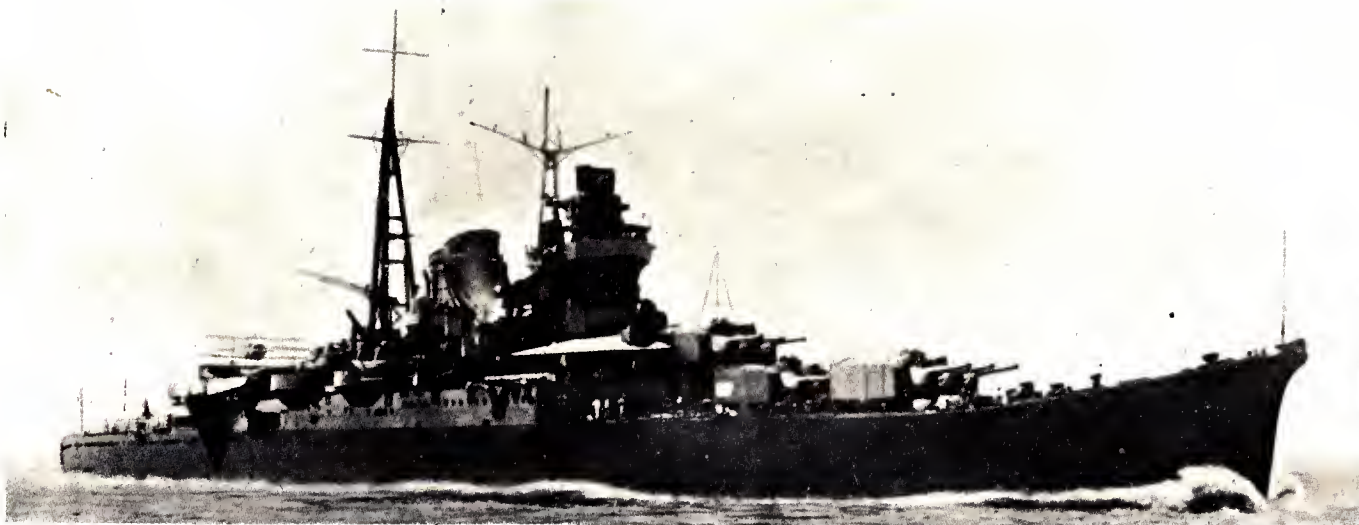
1934



1934

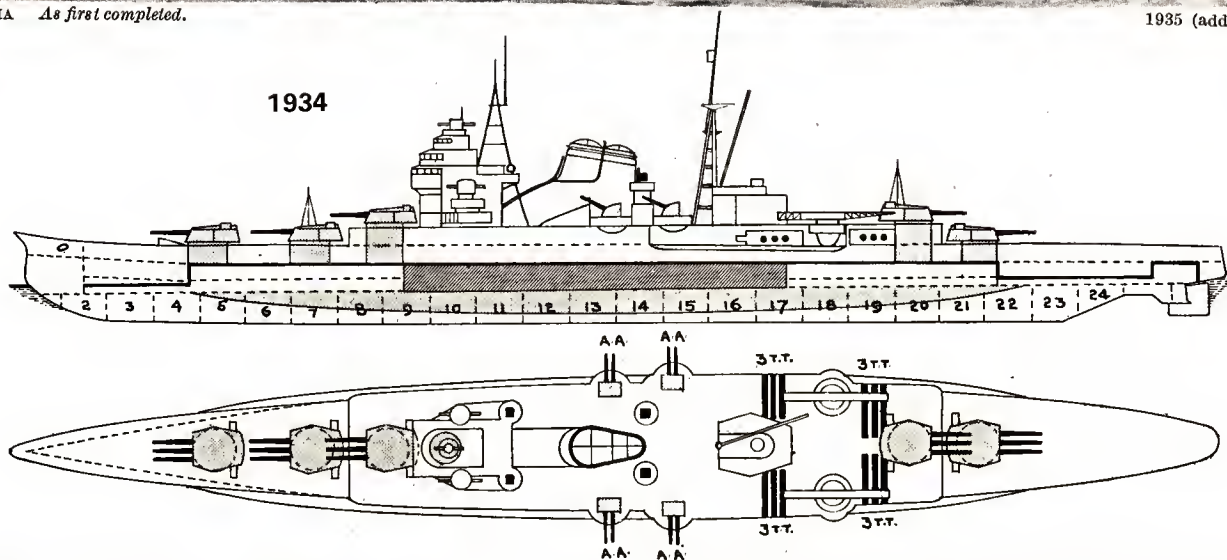


Le Fantasque represented a very successful class of striking appearance and high speed, typical of French construction in the immediate pre-Second World War years.

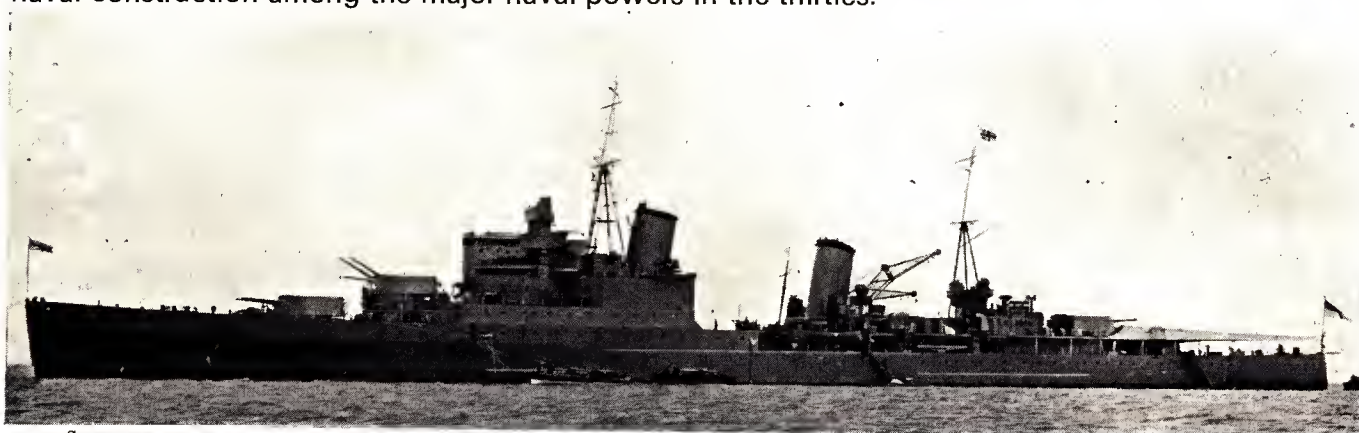


MIKUMA As first completed.

1935 (added 1936)



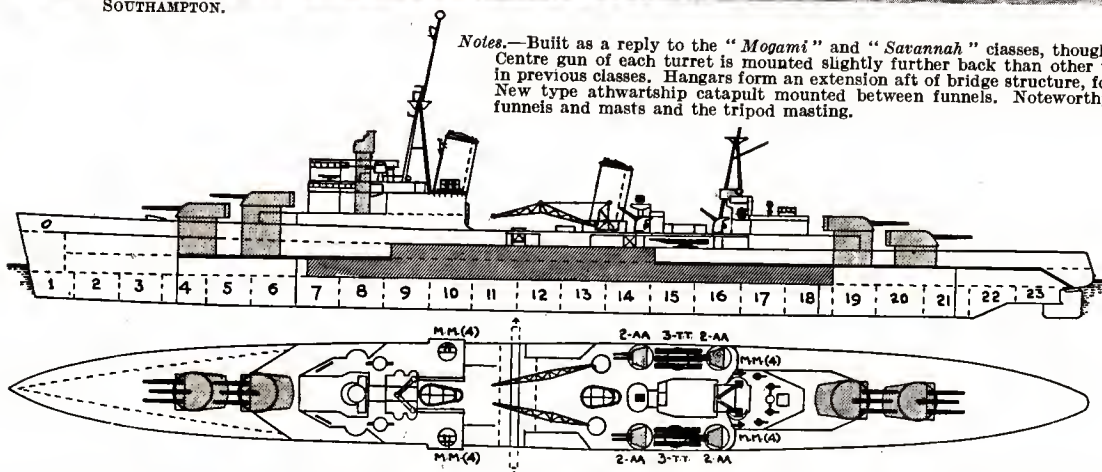
Mikuma was one of a class of six cruisers in the re-armament within Treaty limits which was a feature of naval construction among the major naval powers in the thirties.



SOUTHAMPTON.

1937, R. Perkins.

Notes.—Built as a reply to the “*Mogami*” and “*Savannah*” classes, though the number of 6 inch guns is three less. Centre gun of each turret is mounted slightly further back than other two. Protection is somewhat better than in previous classes. Hangars form an extension aft of bridge structure, fore funnel being carried up between them. New type athwartship catapult mounted between funnels. Noteworthy features of these ships are the raking funnels and masts and the tripod masting.



1936

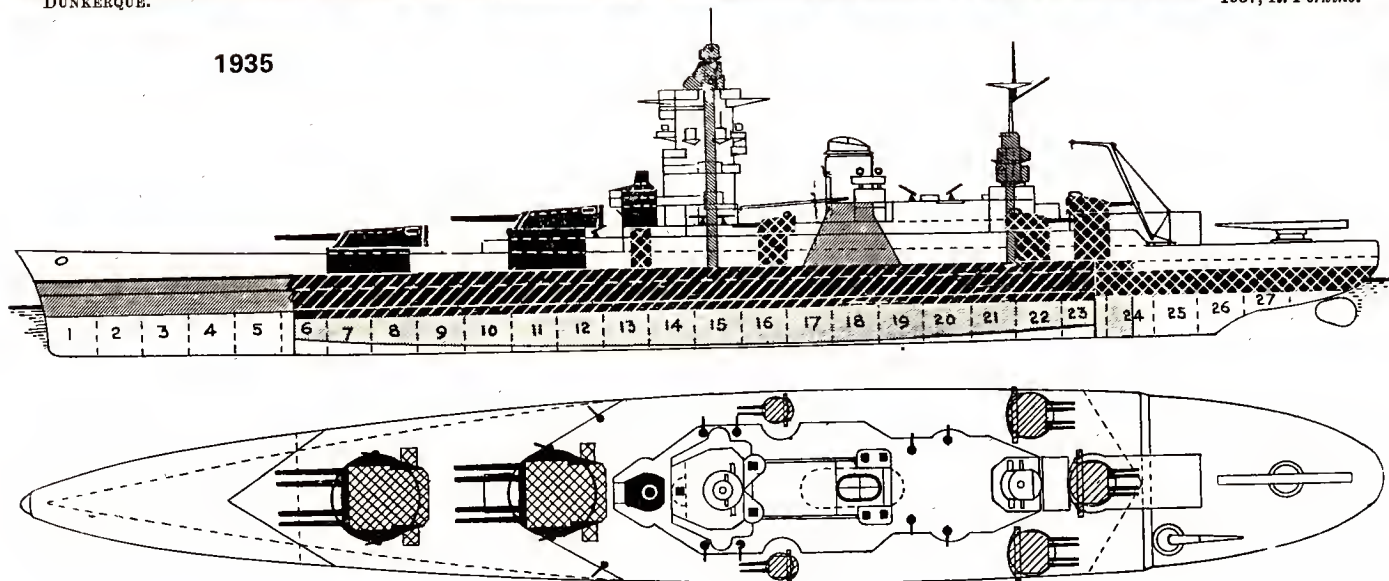
The “*Southampton*” class were among the most, if not the most, handsome, symmetrical and well-proportioned cruisers ever built. They were well armed, commodious and had a fast appearance with raking funnels and masts.



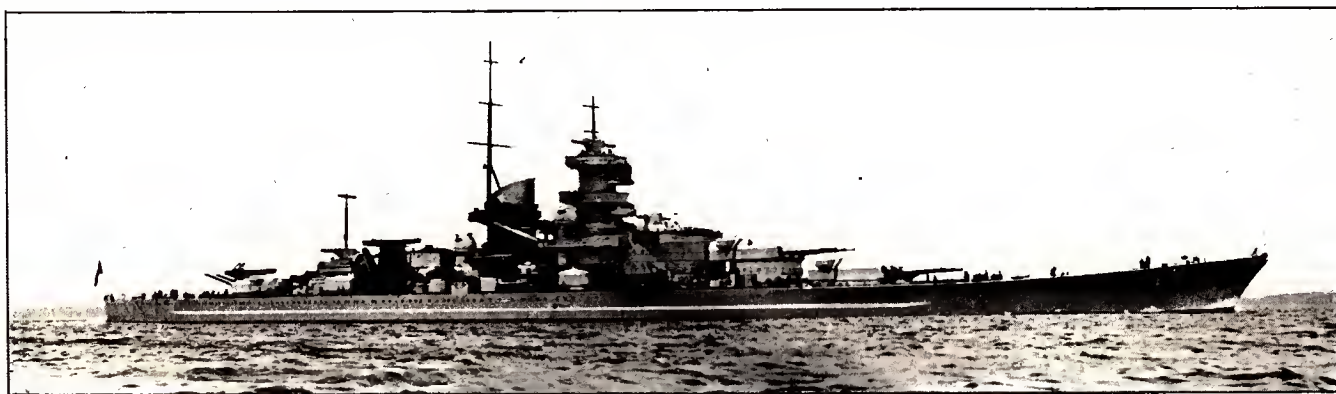
DUNKERQUE.

1937, R. Perkins.

1935



Dunkerque and *Strasbourg* were modelled on the British battleships *Nelson* and *Rodney*, but quadruple turrets were finally adopted. They carried 13-inch guns and the ships were not of the largest size for battleships of the time. Rather unrepresentative of French naval architecture.

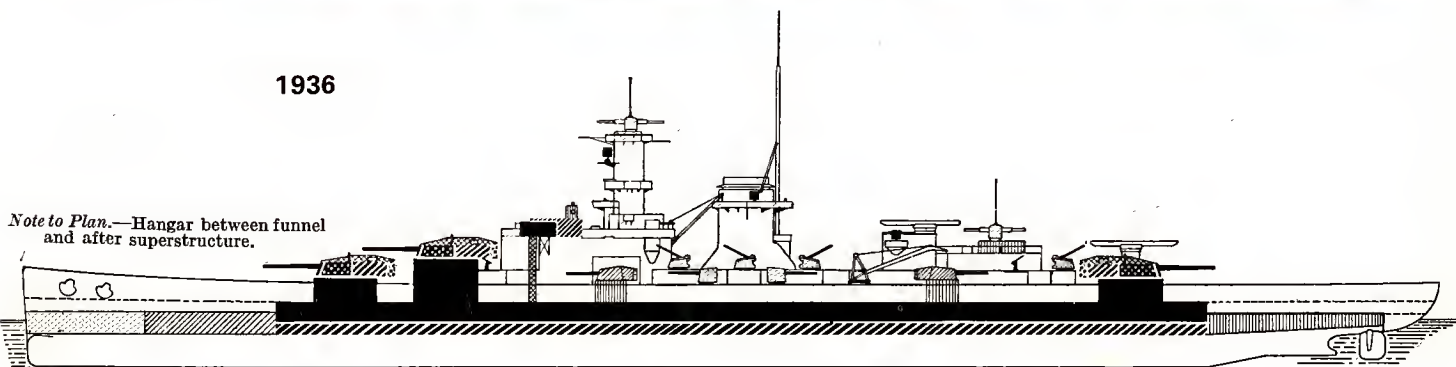


GNEISENAU.

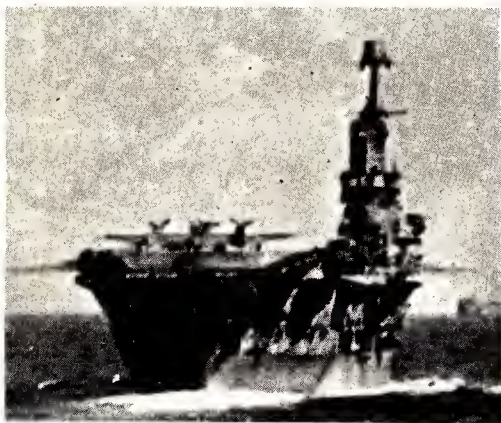
Differences : Bow, funnel, stepping of foremast.

1939, W. Schäfer.

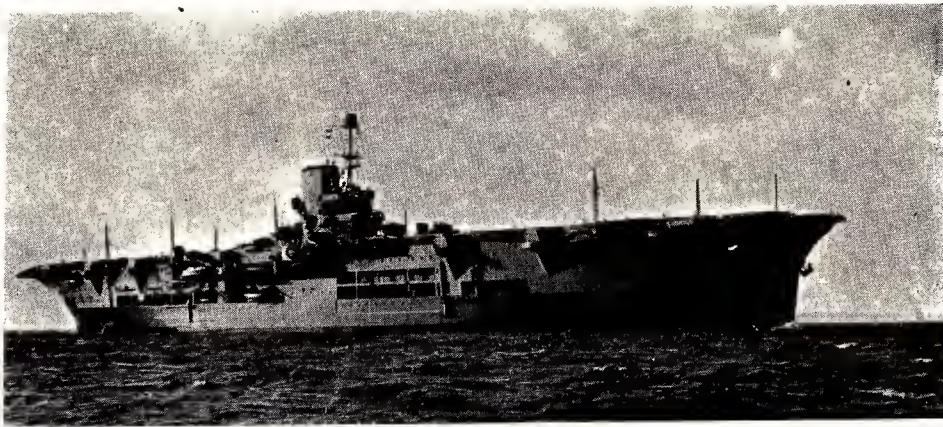
1936



Of about the same "weight" as the French ships mentioned above, *Scharnhorst* and *Gneisenau* might more nearly have been described as battle cruisers than battleships, as they had 11-inch main armament and high speed, but they were protected as well, or almost as well, as battleships.

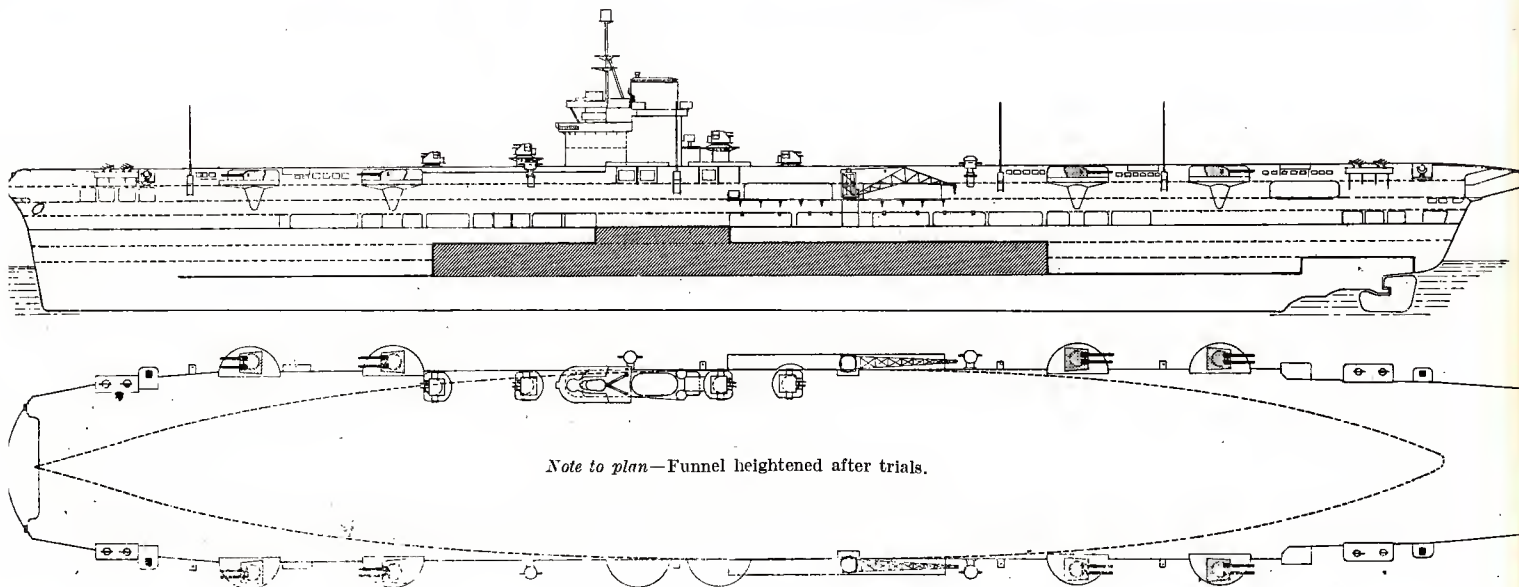


1941. Official.



1933, Wright & Logan.

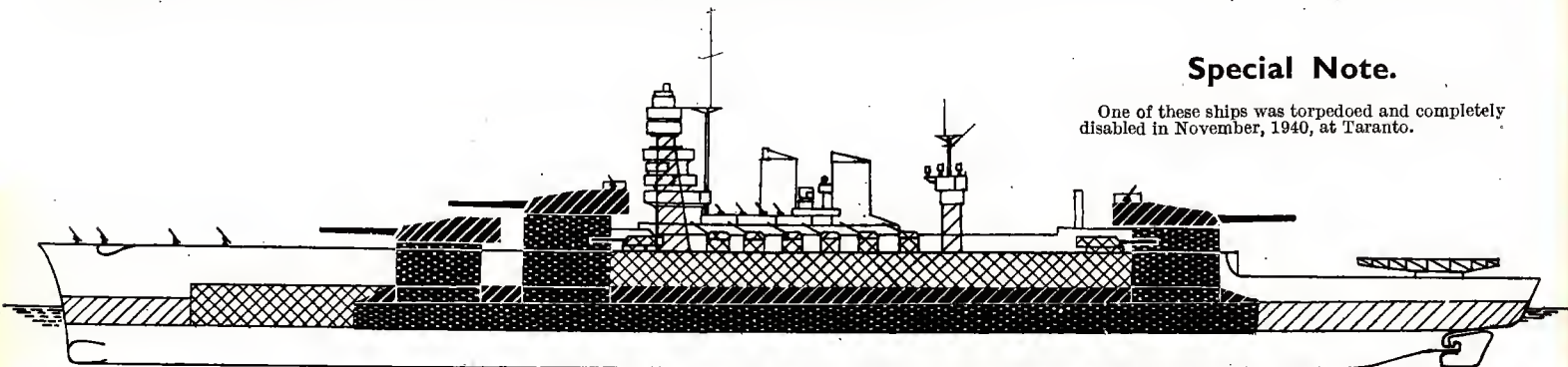
1938



The famous *Ark Royal* of the Second World War, the first of her size specially designed and built from the keel up as an aircraft carrier. Her name and fame are perpetuated in another *Ark Royal*, a considerably larger ship, now undergoing a three-year special refit and modernisation.

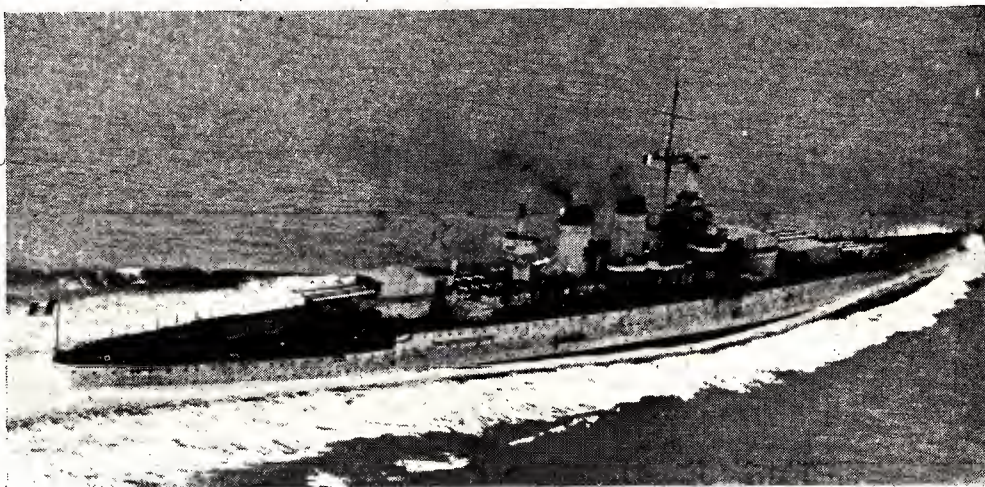
Special Note.

One of these ships was torpedoed and completely disabled in November, 1940, at Taranto.



1937

Littorio (afterwards renamed *Italia*) was one of a class intended to number four units, but only she and her sister *Vittorio Veneto* were completed for service.

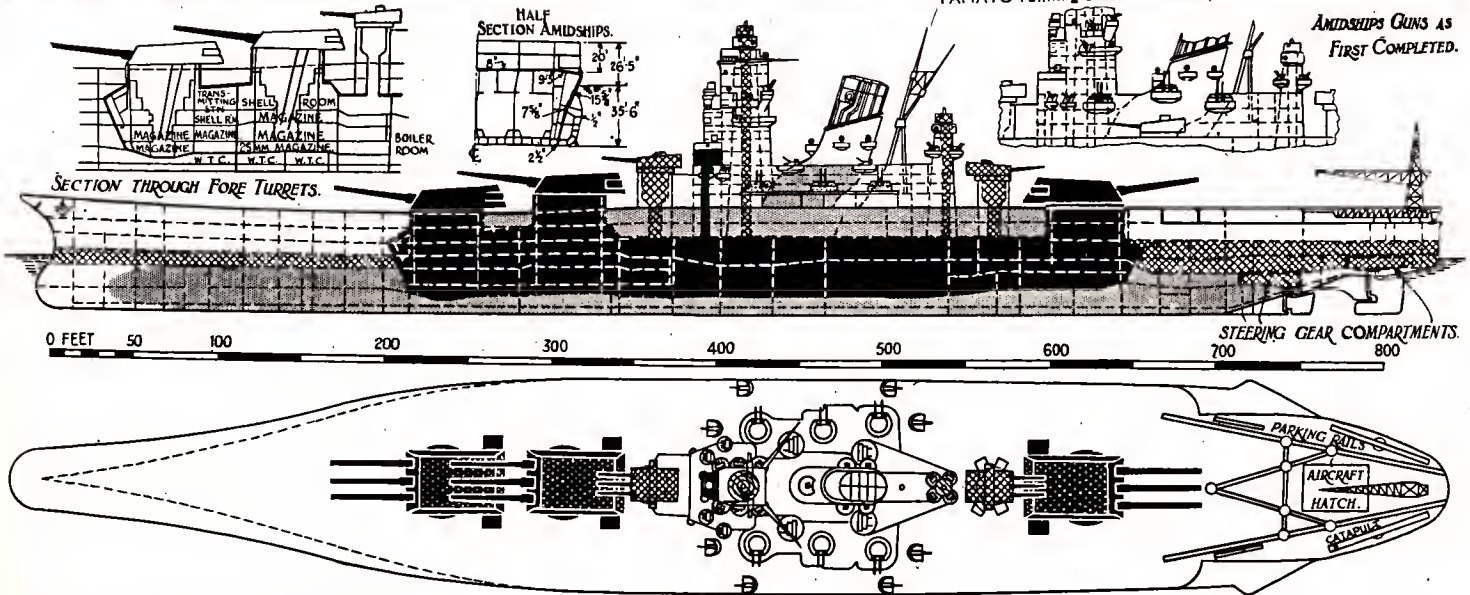


LITTORIO.

1940.



YAMATO running trials Courtesy United States Navy Department.



THE BIGGEST WARSHIPS EVER BUILT

1941

THE Japanese battleships *YAMATO* and *MUSASHI* were undoubtedly the largest ever designed and built by any navy. The names of the battleships are those of ancient provinces, *Yomoshi* being the one in which Tokyo is situated. *Yomoto* was also a poetical title for the whole of Japan many centuries ago. The third ship of this class was converted, while building, into a large aircraft carrier, the *SHINANO*. The ships of the *YAMATO* Class were built as the result of a simple directive to produce the most powerful warships in the world for purposes of conquest. The basic statistics of the class are: length over all 863 feet; beam 127 feet; displacement (standard) 64,000 tons, (full load) as designed 70,800 tons, but actually 72,809 tons; mean draught (full load) 35½ feet; speed (trial) 27 knots; main armament, nine 18.1-inch guns; secondary armament, six 6.1-inch, (as first completed there were twelve, but the beam turrets were removed); AA. armament, twelve 5-inch and a great many smaller guns.

The *YAMATO* was built at the Kure Naval Dockyard, where construction was started in 1937. She was completed and placed in commission on 16 December, 1941. Destined to have an active though unsuccessful career, *YAMATO* was hit by a torpedo fired from the U.S. submarine *SKATE* in the early morning of 25 December, 1943. It was too dark to observe results, but the submarine's captain knew that he had hit a large warship. Valuable time was lost by the Japanese while the *YAMATO* was receiving damage repairs.

During the Battle for Leyte Gulf on 24-26 October 1944, the *YAMATO* received three bomb hits forward of and near "A" turret. Damage was only superficial, and she was easily repaired. During April 1945 she was designated as the major unit of a squadron ordered to disrupt United States landing operations at Okinawa. The force assembled at Tokuyama Bay, in the Inland Sea, comprised the *YAMATO*, the cruiser *YAHAGI*, and eight destroyers.

Under way at 1500 on 6 April, the ships passed through Bungo Strait about dusk.

By 0700, 7 April, breakfast was over. It was to be the last ever taken by many of the Japanese. At about 1000 a hazy radar contact was made with U.S. naval aircraft, which shadowed the enemy for several hours until the main attack developed.

The *YAMATO* was ready for action in every respect by the time the attack developed from the broken cloud cover shortly after noon, when two large groups of carrier-borne aircraft were sighted. The great battleship increased speed to 24 knots, and the screening vessels began the usual Japanese circling tactics. A series of air attacks continued for several minutes,

the roar of the aircraft, as they pulled out of their dives, mingling with the rumble of anti-aircraft fire. After the first wave of 'planes had attacked, the *YAMATO* had received four bomb hits in the vicinity of "Y" turret and two or three torpedo hits on the port side. Two bombs penetrated the upper and main decks and detonated below the latter. One of the bombs passed through the secondary fire-control station and wrecked the after director for the secondary armament. These bombs started a fire which was never extinguished until the battleship sank.

A list to port of 5 to 6 degrees was reduced to 1 degree by counterflooding on the starboard side before the next attack developed about 40 minutes later. Four torpedo hits on the port side and one on the starboard side left the ship with a 15- to 16-degree list to port. At this point all possible starboard spaces were flooded to bring the list down to 5 degrees.

With the speed reduced to not more than 18 knots and the fire still burning aft, in the *YAMATO*, the third attack developed at about 1345. In assessing the number of torpedo hits in the final attack, it appears that two or possibly three torpedoes struck to port and one to starboard. The *YAMATO*'s speed was cut down sharply to not more than 10 knots, with only the starboard engine left in operation. A list of 16 to 18 degrees to port was increasing rapidly, and the ship was getting very sluggish, as all power failed soon

after 1400.

The list was increasing at an alarming rate, and the commanding officer gave the order "Prepare to abandon ship". In a very short time the order "Abandon ship" followed. The *YAMATO* capsized very quickly, before personnel from below could escape. As she reached an angle of about 120 degrees, a large explosion occurred, and the ship disappeared beneath the surface. Only about 280 survivors were picked up, all of whom were from topside stations.

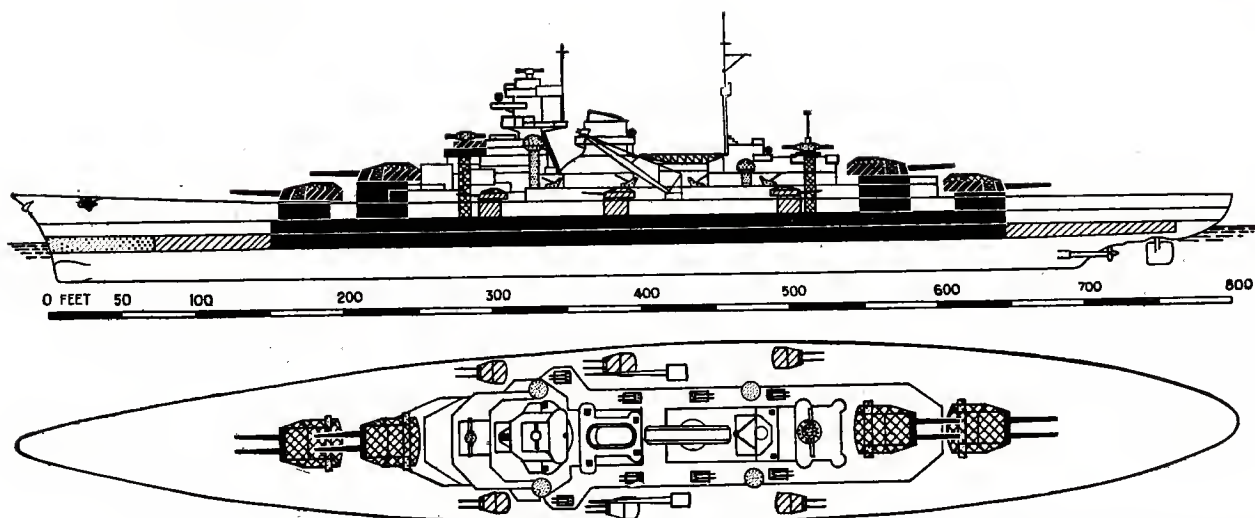
The above account in the 1947-48 edition continues with an account of the sinking of *Musashi* by US aircraft in the Central Philippines on 24 October 1944, and of the sinking of *Shinano* by US submarine *Archerfish* off Japan on 29 November 1944.

Yamato and *Musashi* were the largest battleships ever designed and built by any navy and their construction reflected great credit on the Japanese naval architects.



The *YAMATO* during the Battle of Leyte Gulf, showing bomb hits forward of "A" turret.

(U.S. Navy Official Photo.)



Notes.—*Bismarck*, the first unit of this class to be completed, was sunk in action on May 27, 1941. Unofficial reports suggest that the second of the two still under construction may be named either *Friedrich der Grosse* or *Hindenburg*. Very little progress appears to have been made with them since war began, and it is questionable whether they will ever be completed.

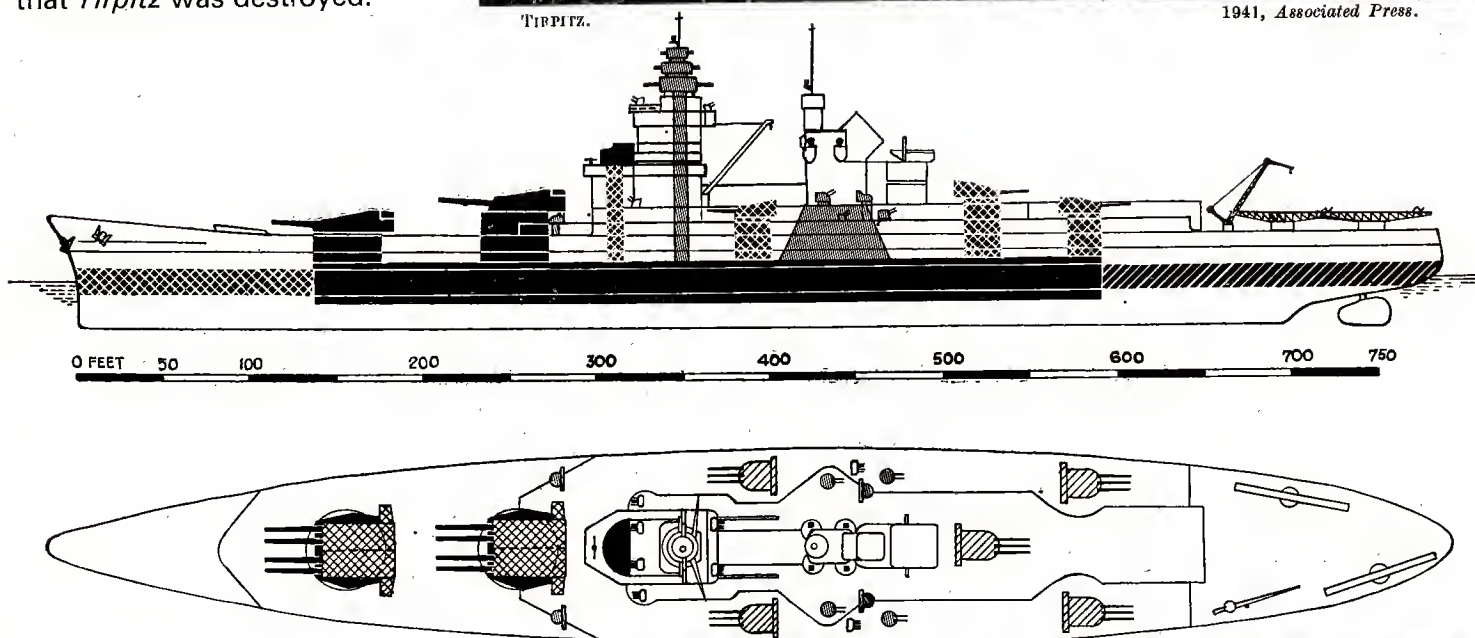
1939

Tirpitz, sistership of *Bismarck*, the German battleships which absorbed so much of the Allied war effort to destroy. Although *Bismarck* was sunk by British Naval forces on 27 May 1941, it was not until 12 Nov. 1944 that *Tirpitz* was destroyed.



TIRPITZ.

1941, Associated Press.



JEAN BART after disablement at Casablanca, Nov., 1942 (p. 165).

1942, U.S. Navy, Official

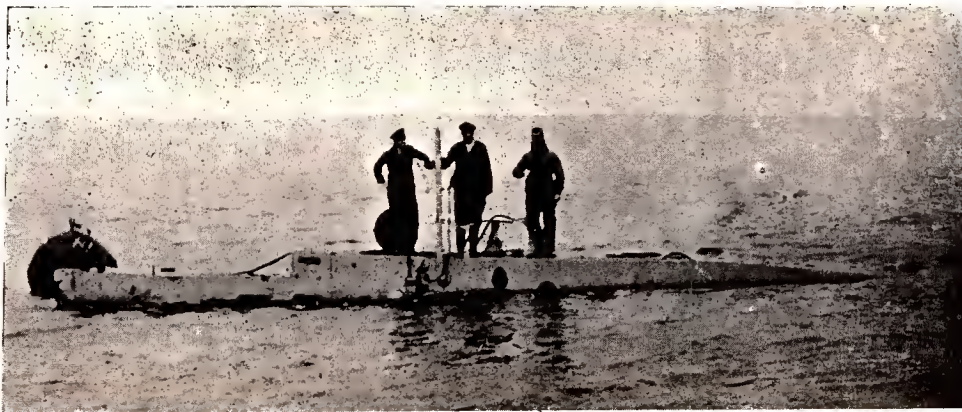
1940

The French battleships *Richelieu* and *Jean Bart* have had a very chequered building and service history. They still exist as training or accommodation hulks.



RICHELIEU.

Added 1941.



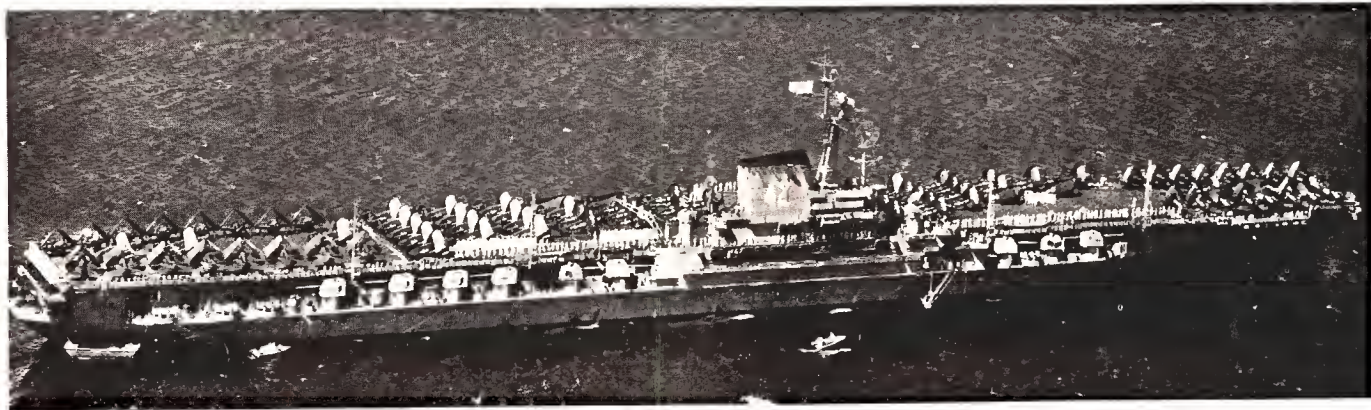
X TYPE.

1943, Official.

All are distinguished by numerals prefaced by the letter X, and appear to be about 40 feet in length. Complement at least 3.

Midget submarines were a product of the Second World War, and intended for particularly hazardous operations in confined and intentionally blocked waters. Some still exist as museum pieces or dismantled and laid up.

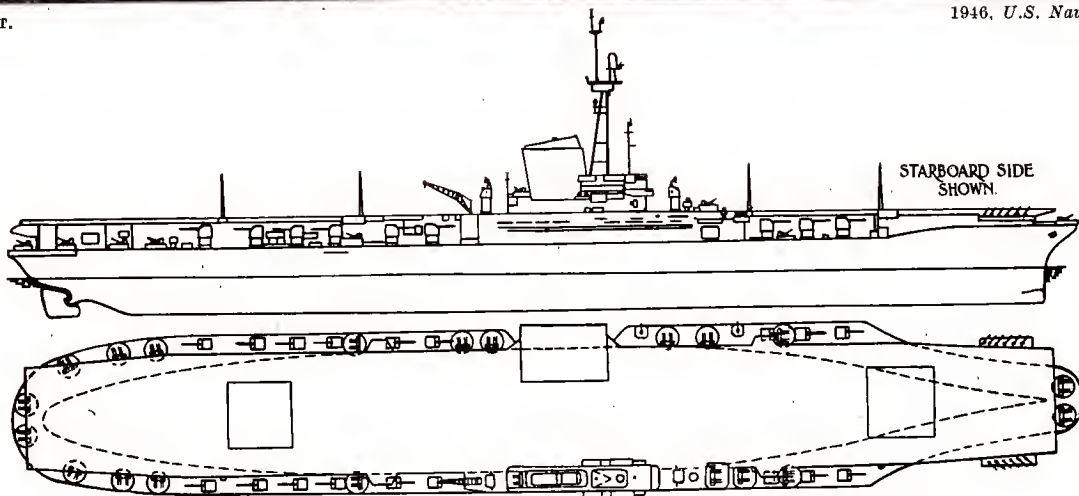
1943



F. D. ROOSEVELT.

1946, U.S. Navy Official.

1945



STARBOARD SIDE SHOWN.

Machinery: Geared turbines. 4 shafts. S.H.P.: 200,000=33 kts. Boilers: 12.

Coral Sea, *Franklin D. Roosevelt* and *Midway* were the first class of big United States aircraft carriers. Two were completed in 1945 but *Coral Sea*, completed in 1947, was the last aircraft carrier of war design. All three ships have been refitted and modernised several times since then and make three of the U.S. Navy's attack force of fifteen.

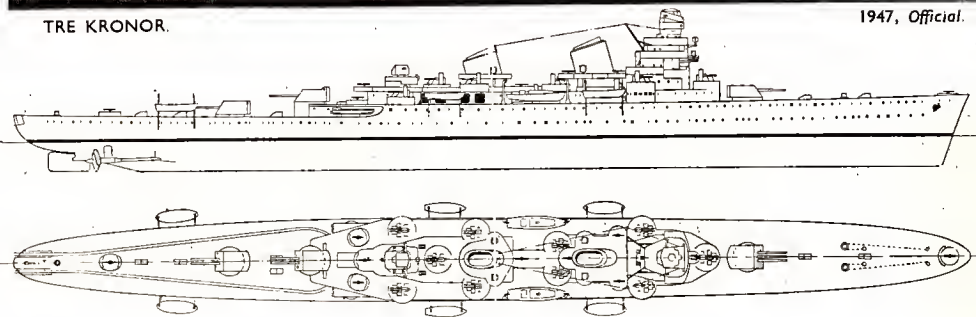
1944



TRE KRONOR.

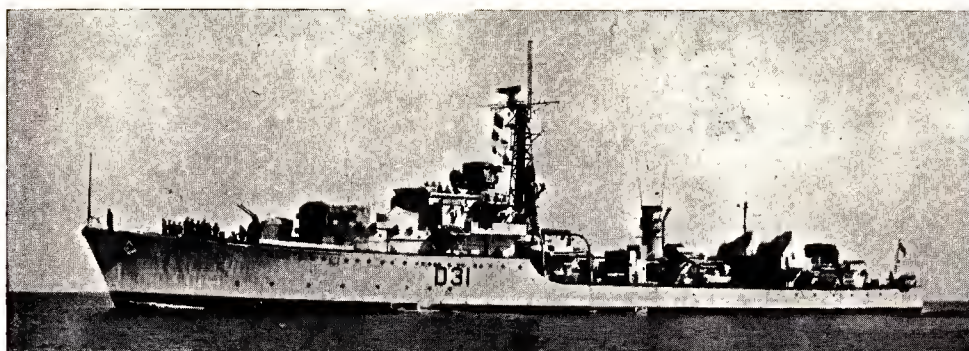
1947, Official.

The two ships of the "Tre Kronor" Class presented a combination of excellent design and pleasing appearance. *Tre Kronor* was discarded in 1964 but *Gota Lejon* with appearance changed by modification, but still handsome, survives..



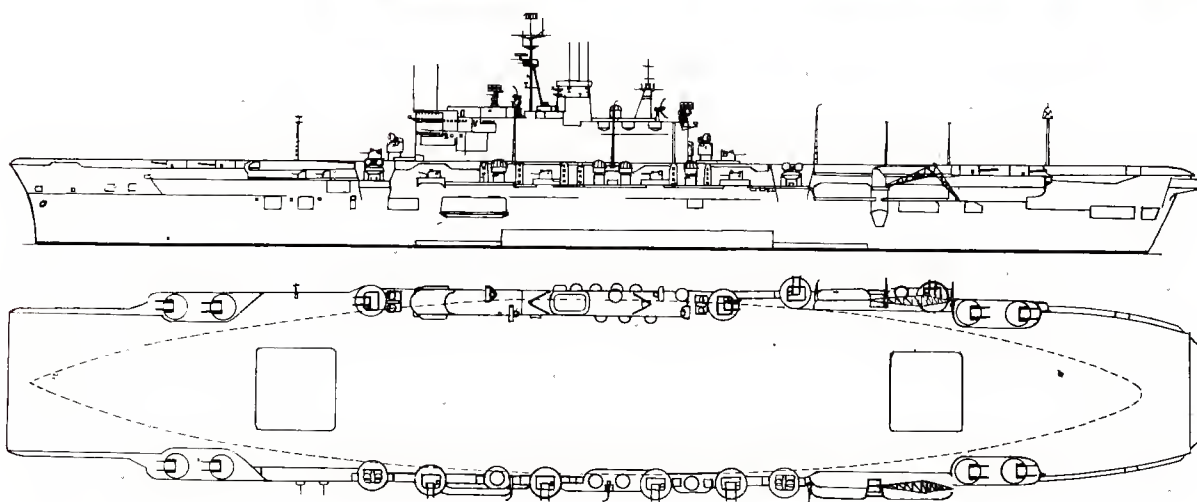
The four destroyers of the "Weapon" class, *Battleaxe*, *Broadsword*, *Crossbow* and *Scorpion* were originally armed and equipped as anti-submarine escorts, but they were later converted to the first radar pickets in the Royal Navy.

1946



BROADSWORD.

1949, Wright & Logan.



1946

General Notes.—These two ships are the largest British aircraft carriers ever built. *Eagle* ordered, 19 May 1942 and officially stated finally accepted into Royal Naval Service 1 March 1952. *Ark Royal* is in course of fitting out. They are stated to be 90 per cent. welded construction. Damage control arrangements exceptionally complete. Announced *Eagle* cost £15,795,000. Two more large fleet aircraft carriers of this type, *Africa* and original *Eagle*, were cancelled. Latter had been ordered from Vickers-Armstrongs (Tyne). Three much larger fleet aircraft carriers, to have been named *Gibraltar*, *Malta* and *New Zealand*, were also cancelled.



EAGLE.

1952, Wright & Logan.

This latest *Ark Royal* and her sister ship *Eagle* were the first large aircraft carriers built for the Royal Navy. Although laid down during the Second World War their construction was not pushed after hostilities ceased and they were not completed until 1955 and 1951 respectively. *Eagle* has since been almost completely rebuilt, and *Ark Royal* is undergoing modernisation to bring her almost up to the same standard.

1939

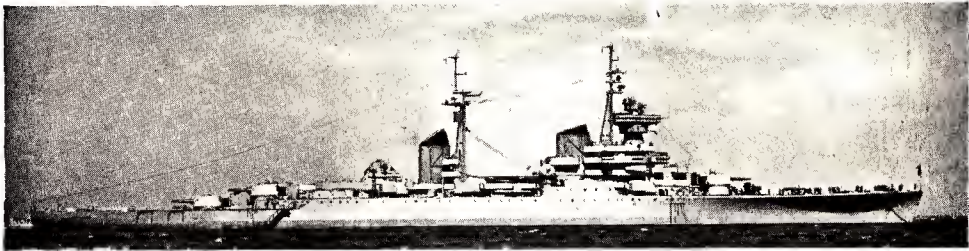
Aquila was Italy's first essay to provide an aircraft carrier. The conversion of the liner *Roma* was begun in the first year of the Second World War and, renamed *Aquila*, she was practically ready in Sept. 1943 (Italy's armistice) but lacked her aircraft. She fell into German hands but was severely damaged by Italian human torpedoes on 19 April 1945 to prevent the Germans using her to block the harbour of Genoa.



AQUILA (ex-Roma).

Photo, June 13, 1946.

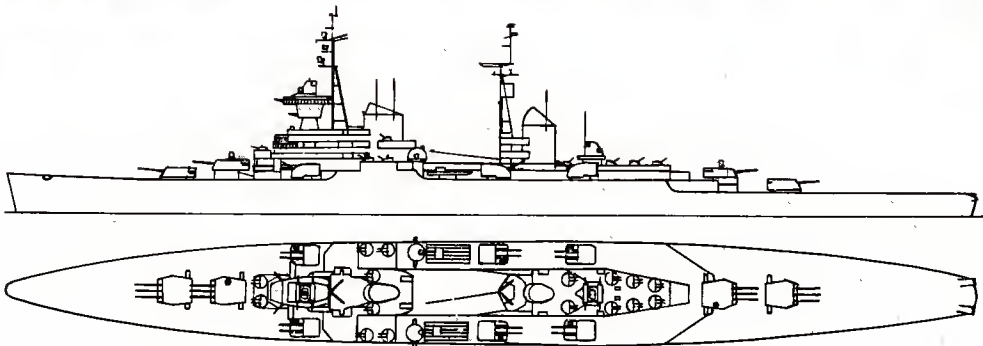
Sverdlov was the first of an intended class of 24 cruisers to form the backbone of the Soviet Union's post-war modern fleet. But orthodox cruisers were by then becoming as obsolescent as battleships and, realizing this, the U.S.S.R. completed only 14 ships of the type and concentrated on building submarines and guided missile armed destroyers, among several other new types of warships.



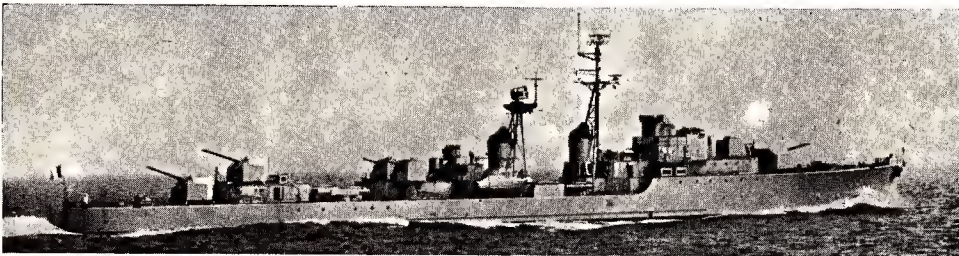
SVERDLOV

1953 photo, Wright & Logan.

1951



1952

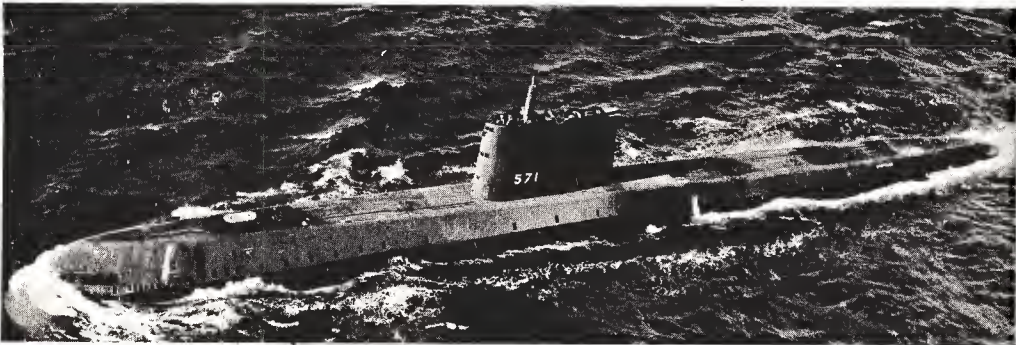


SURCOUF.

1955, French Navy, Official.

Surcouf was the lead ship of a group of 18 destroyers of sound design and low-lying appearance which still form the spearhead of the French Navy. Since original completion they have been altered in appearance and divided into groups for guided missile, command, anti-submarine, and aircraft direction roles.

Nautilus represented a real landmark in the history of navies and naval architecture. She was the first nuclear powered submarine built for any navy and the world's first nuclear powered ship. She was the forerunner, with *Seawolf*, of 80 nuclear powered submarines built by the U.S.A. since 1955.



NAUTILUS (on initial sea trials 20 Jan. 1955).

1955, U.S. Navy, Official.

1954



NAUTILUS (under way for first time 17 Jan. 1955).

1955, U.S. Navy, Official.

3 Electric Boat Co., Groton, Conn.

1 Portsmouth Naval Shipyard

SSN
571 NAUTILUS

SSN
575 SEA WOLF

SSN
578

SSN
579

Displacement :
Dimensions :
Tubes :
Machinery :

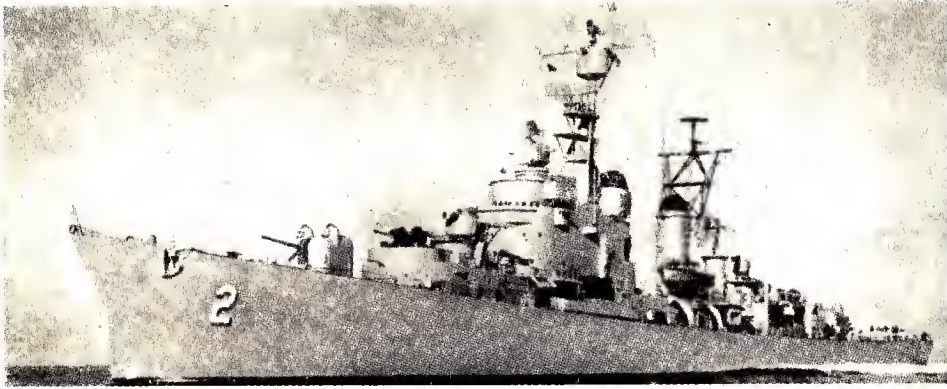
Nautilus 2,980 tons light, 3,180 tons standard (surface), *Sea Wolf* 3,260 tons light
Sea Wolf, 320 (o.o.) x 30 feet, *Nautilus* 300 x 28 feet
6—21 inch (*Nautilus*)

Nautilus engine : Thermal reactor and water coolant. Geared turbines. 2 shafts. 5.H.P. : 1,500
Sea Wolf engine : Intermediate reactor with a liquid metal coolant.
Over 20 kts. submerged (30 kts. submerged expected in *Sea Wolf*)

Speed :
Range :
Cost :
Complement :

25,000 mil s
\$29,000,000 without engine (*Nautilus*), \$32,700,000 without engine (*Sea Wolf*)
101 (12 officers, 89 men)

Notes.—*Nautilus* engine by Westinghouse. Commissioned 30 Sep. 1954. Carried out first trials 17 Jan. 1955. Her engine alone cost about \$25,000,000. Reported to be designed to travel faster under water than on the surface. Her prow therefore is bulbous to obtain better underwater performance as compared with conventional submarines designed for top speed on surface and which have knife blade prows. Diving depth 700 feet. *Nautilus* has three engine room deck levels, propulsion by either atomic power, diesel or electric motors. *Sea Wolf*, another unit of this type ordered 19 July 1952, with engine of different type manufactured by General Electric Company to cost \$20,000,000. Two more atomic powered submarines were requested in 1955 fiscal appropriations.

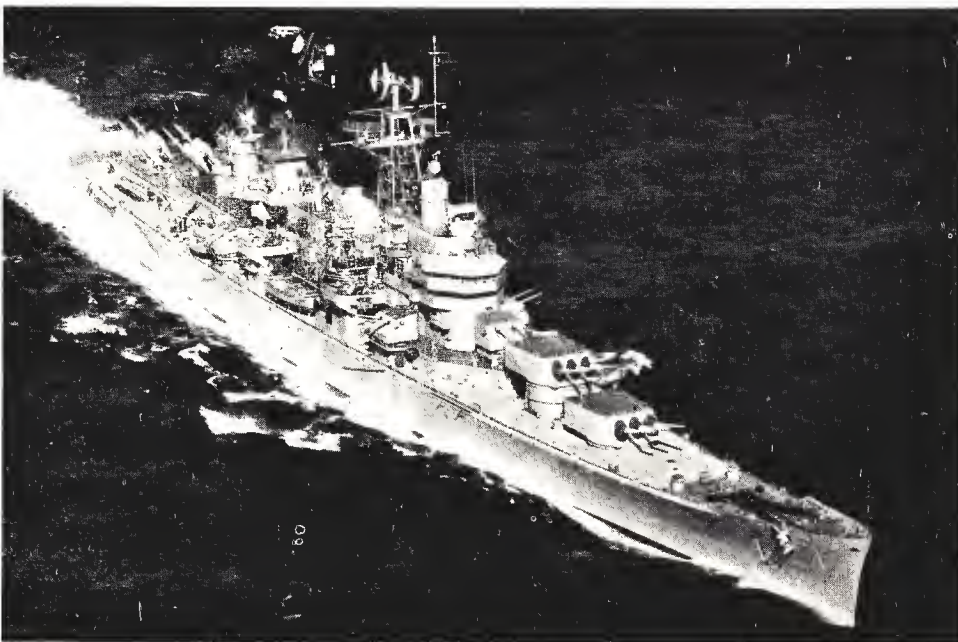
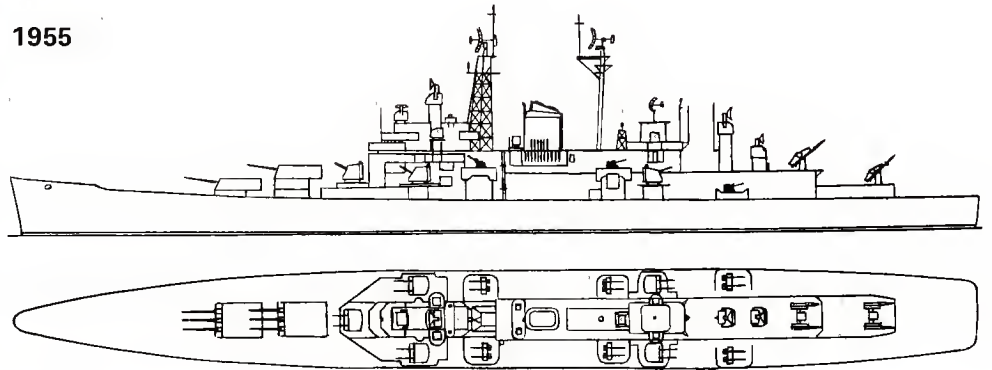


1952

Mitscher and her three sister ships were begun as destroyers, and were the largest conventional destroyers ever built, but they were re-rated as destroyer leaders while still under construction and again reclassified as frigates in 1955. Somewhat paradoxically, now that they are being converted to guided missile armed ships they are again being redesignated and once again become destroyers (DDG) in the U.S. Navy.

Boston and *Canberra*, originally heavy cruisers, were converted into the world's first guided missile armed cruisers and the first operational combat ships capable of firing supersonic anti-aircraft guided weapons. Since their conversion, however, many other orthodox cruisers have been partially or completely converted to guided missile ships for the U.S. Navy.

1955



BO5TON

1956, U.S. Navy, Official

General Notes

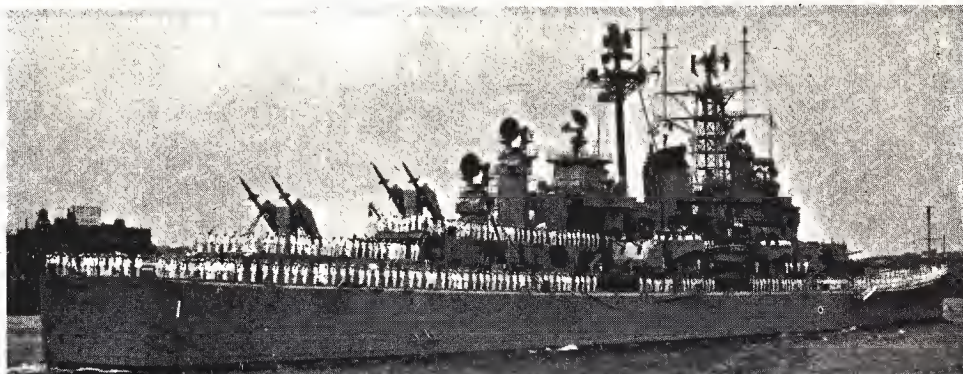
The world's first guided missile cruisers and first operational combat ships capable of firing supersonic anti-aircraft guided weapons. These ships with their associated radars and guidance systems for the "Terrier" and other anti-aircraft missiles represent a completely new naval weapons system specifically designed to further the U.S. Navy's policy of countering aircraft. Formerly classified as Heavy Cruisers (CA). *Boston* was originally built in exactly two years. *Canberra*, just before completion, was renamed in commemoration of H.M.A.S. *Canberra* which was sunk in the 1st Battle of Savo Island, 9 Aug., 1942.

Conversion Notes

Both ships were converted to Guided Missile Heavy Cruisers (CAG) by the New York Shipbuilding Corporation, Camden, New Jersey, at a cost of \$30,000,000 for both. The after 143-ton 8 inch triple gun turret and the after 5 inch twin gun mounting were removed and two twin guided missile launchers mounted in "X" and "Y" positions in their place. Both ships have undergone other drastic changes to prepare them for their new role of defence against aircraft. The ships' superstructure was entirely remodelled to accommodate the new weapons. One of the two funnels was entirely removed which vastly alters the appearance of the vessels.

Guided Missile Notes

A slim needle-nosed supersonic anti-aircraft weapon, with a length of 27 feet and a speed of 1,500 m.p.h., the "Terrier," developed by the U.S. Navy's Bureau of Ordnance is designed to intercept aircraft under any weather conditions at a longer range and higher altitudes than conventional anti-aircraft guns. Stowage of the "Terrier" is below decks in two magazines, dubbed the "coke machines," which are completely automatic loading devices. Radar and electronic equipment for detecting targets and for guiding the missiles represent the most drastic change. This equipment is the most modern available and is designed for a maximum degree of automatic operation. Each of the two twin launchers is capable of firing two "Terriers" simultaneously. Can launch four missiles in eight-tenths of a second. Two missiles per launcher every 30 seconds. Automatic loading. 144 "Terrier" missiles carried in each ship. The "Terrier" was fired experimentally in fleet operations in Nov. 1954, from the U.S.S. *Mississippi*, the Navy's oldest battleship, which had been converted into a test ship for this purpose; she was scrapped in 1957.

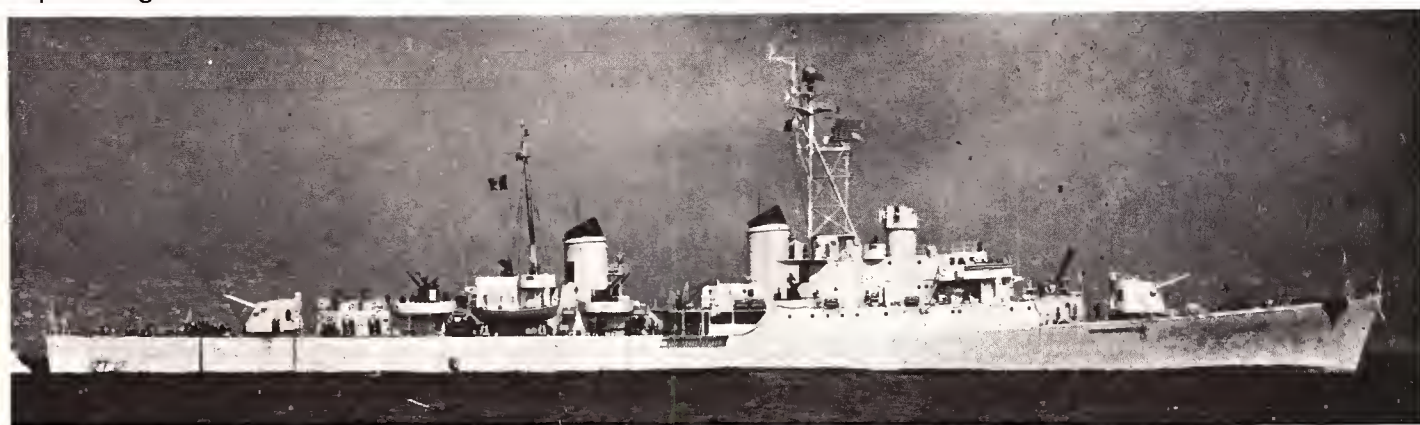




TENBY

1958, Wright & Logan

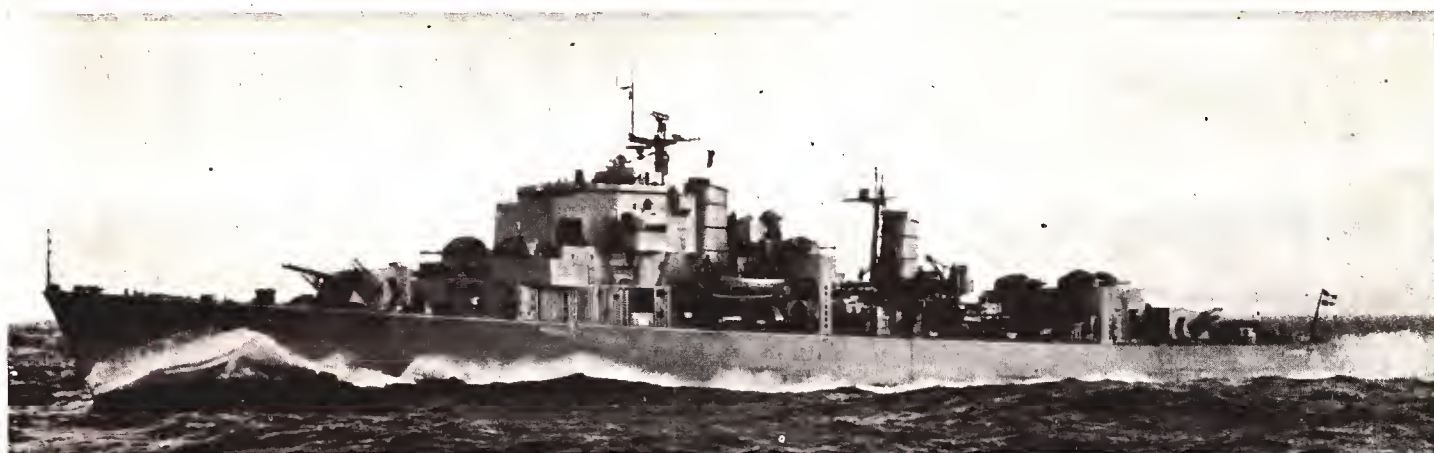
The "Whitby" type of anti-submarine frigate were considered to be the most useful class of their category ever put into service with the Royal Navy. From them were developed the "Rothesay" class and, later, the even more successful "Leander" class which is now in series production as a standard type of general purpose frigates.



IMPETUOSO

1958, Italian Navy, Official

Impetuoso and *Indomito* were Italy's first destroyers to be constructed since the Second World War. Although completed as recently as 1958 their conversion and modernisation is under consideration and they may be armed with guided missile launchers.



ÖSTERGÖTLAND

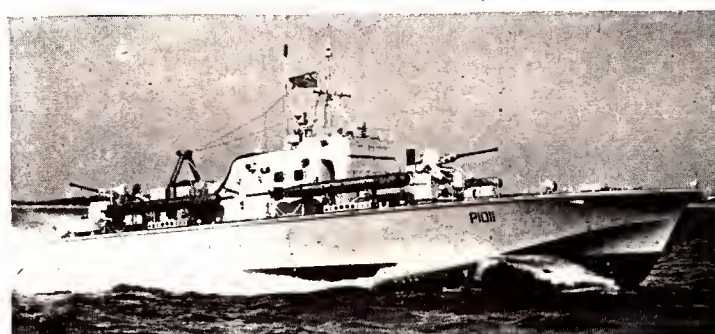
1958, Royal Swedish Navy, Official

The "Ostergötland" class of four destroyers are typical of Swedish construction between the wars. Although presenting a broken silhouette from a complicated and ragged superstructure precluding clear lines, they are still handsome and symmetrical.

1956

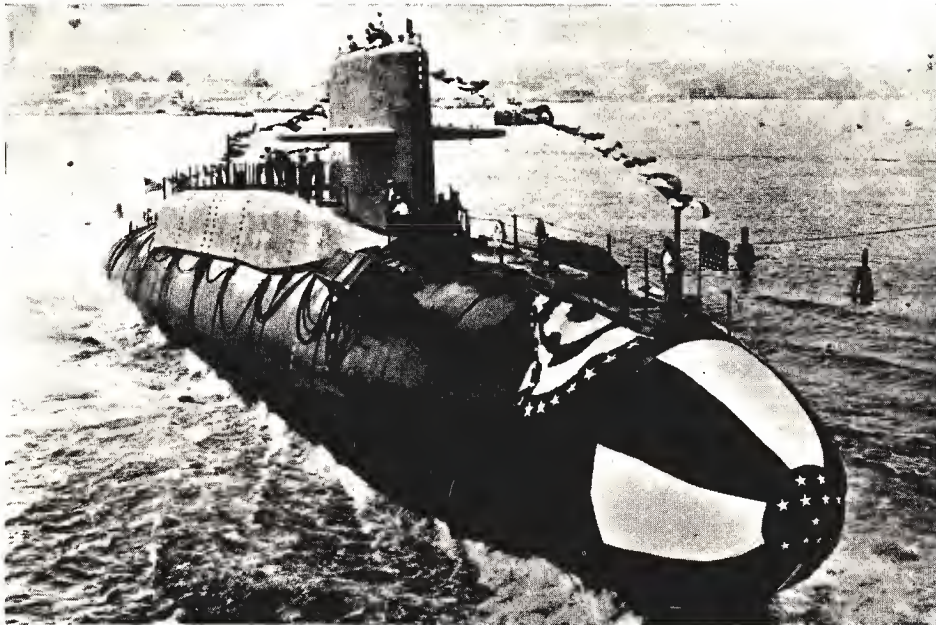
1958

Brave Borderer and *Brave Swordsman* are among the few vessels left in the Royal Navy to represent its interest in Coastal Forces. These gas turbine powered fast patrol boats or convertible torpedo-gunboats are most successful, and very fast, and several navies have ordered similar boats from their specialist builders, Vosper.



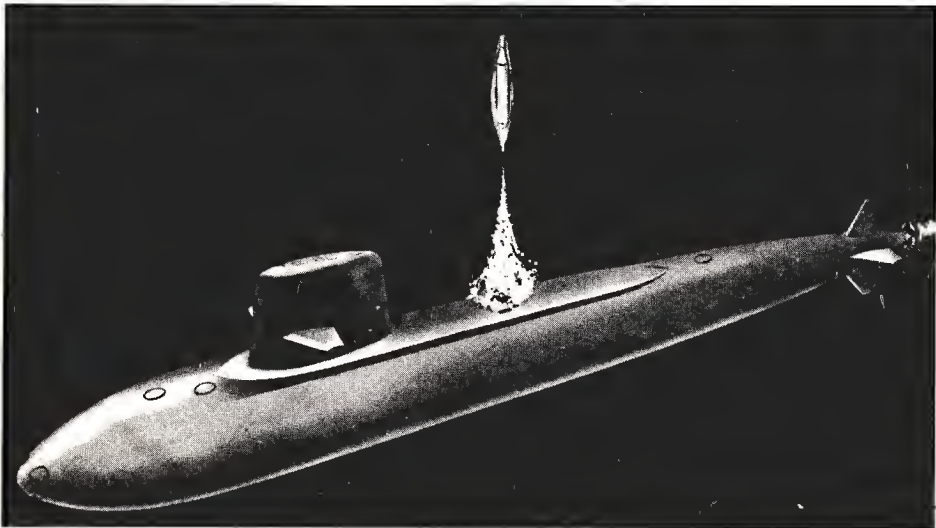
BRAVE BORDERER

1960, courtesy Vosper Ltd., Portsmouth (Builders)



GEORGE WASHINGTON (launching)

1959, United States Navy, Official



GEORGE WASHINGTON (artist's conception)

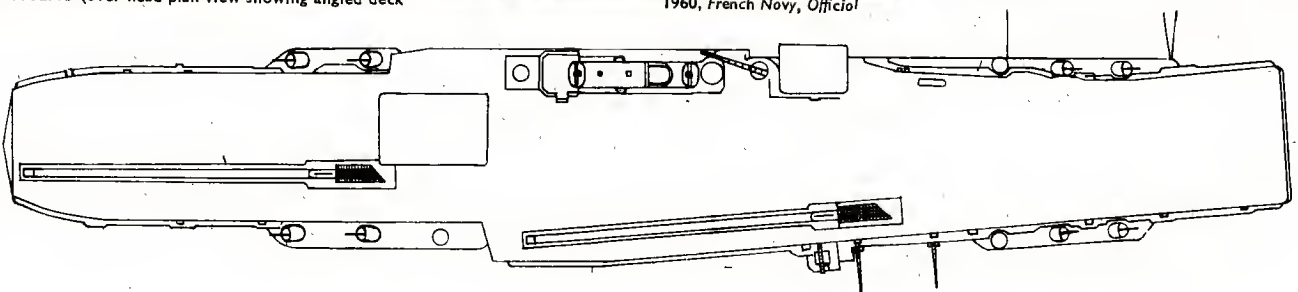
1959, United States Navy, Official

George Washington was the first nuclear powered submarine armed with fleet ballistic missiles to be built in the world and reflects the highest credit on her designers. Since she was completed in 1959 no fewer than 41 ballistic missile submarines have been completed for the U.S. Navy, another massive achievement.



CLEMENCEAU (over-head plan view showing angled deck)

1960, French Navy, Official



Nuclear Powered Fleet Ballistic Missile Submarines (SSBN)

5 New Construction

1 Newport News
SSB (N) 601
ROBERT E. LEE

1 Portsmouth Naval Shipyard
SSB (N) 602
ABRAHAM LINCOLN

Notes

In Apr. 1958 funds were requested for two more nuclear powered fleet ballistic missile submarines for carrying the "Polaris" missile, under the Second 1957-58 Supplemental New Construction Program. They will have whale-shaped hulls. Six submarines of this class were authorized by Congress. Two were awarded in July.

2 Electric Boat Division
General Dynamics Corporation, Groton, Conn.

SSB (N) 598
GEORGE WASHINGTON

SSB (N) 599
PATRICK HENRY

1 More Island Naval Shipyard, California

SSB (N) 600
THEODORE ROOSEVELT

Displacement: 5,400 tons light, 5,600 tons standard, 6,700 tons submerged
Dimensions: Length: 380 feet. Beam: 32 feet
Guided Missiles: 14 "Polaris" missiles (30 feet long, 50 ins. diam. with nuclear warheads, and a range of 1,500 miles)
Tubes: 4—21 inch forward
Machinery: 1 Water-cooled nuclear reactor by Westinghouse. General Electric geared turbines
Complement: 100 (10 officers, 90 men). 558Ns will have two complete crews assigned designated "Blue" and "Gold" which will relieve each other

Notes

The First 1957-58 Supplemental New Construction Program signed on 11 Feb. 1958 provided \$296,000,000 for the construction of three nuclear, powered guided missile submarines armed with "Polaris" fleet ballistic weapons. They will have "Albacore" type hull configuration, giving them high underwater speed, and will be equipped with "SINS", the U.S. Navy's revolutionary new navigational system, and with new stabilizing and electronics apparatus incorporating the most recent engineering advances. These three submarines are designed specifically for carrying and launching the "Polaris" missile, to be fired with submarine submerged, vertically from within the submarine. "Subroc" anti-ship missiles to be fired through torpedo tubes. They will differ from nuclear powered submarines now under construction chiefly in their missile features. Ordered on 14 Feb. 1958. This class have an auxiliary diesel engine and batteries, both of which can be used for emergency propulsion. 558Ns 548-602 are of modified "Skipjack" design with a 128-ft. missile launching section inserted. *George Washington* was scheduled to be commissioned in Dec. 1959, *Patrick Henry* in 1960.

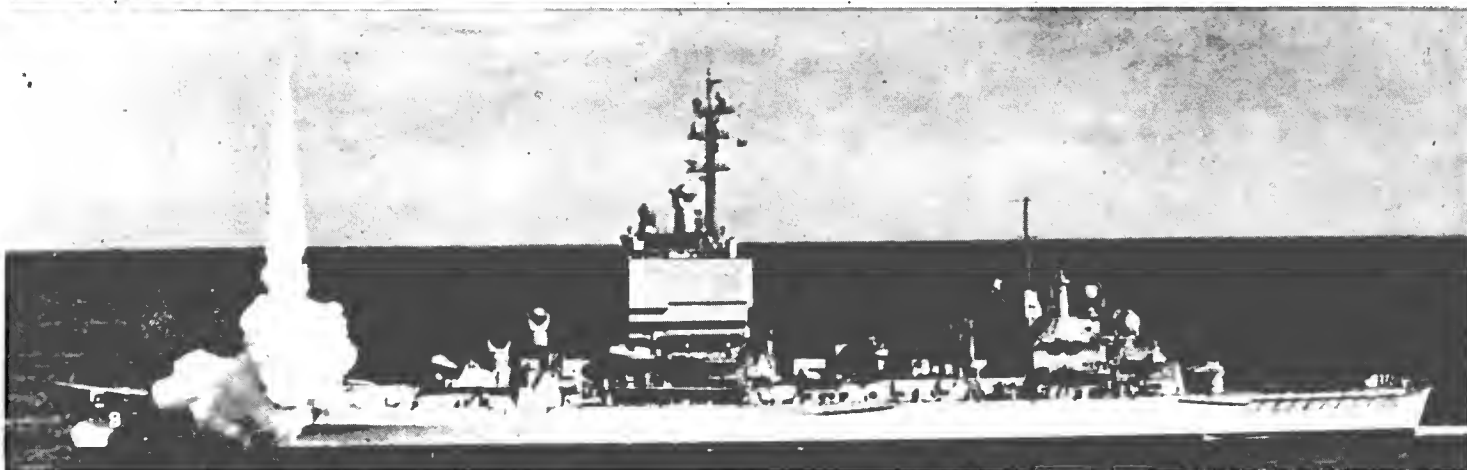
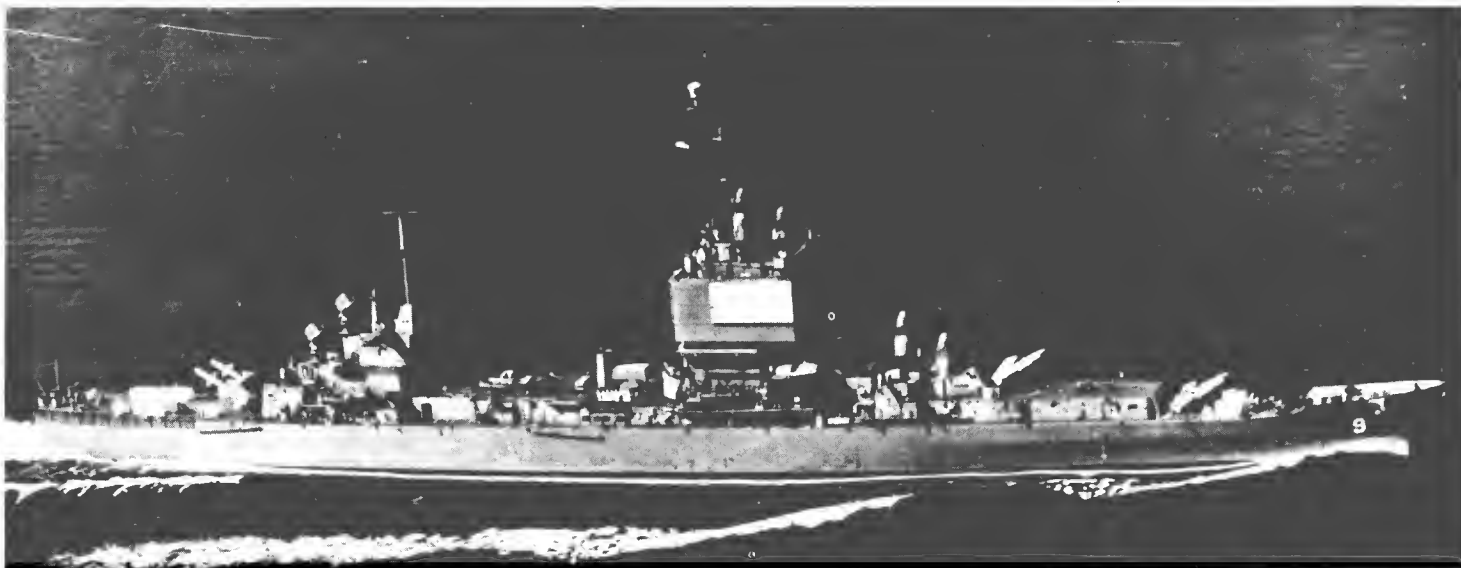
No.	Name	Laid down	Launch
598	<i>George Washington</i>	1 Nov. 1957	9 June 1959
599	<i>Patrick Henry</i>	27 May 1958	22 Sep. 1959
600	<i>Theodore Roosevelt</i>	20 May 1958	2 Oct. 1959
601	<i>Robert E. Lee</i>	25 Aug. 1958	18 Dec. 1959*
602	<i>Abraham Lincoln</i>	1 Nov. 1958	2 Apr. 1960*
608	<i>Ethan Allen</i>	15 Aug. 1959	1 Nov. 1960*

* officially estimated date

1959

1957

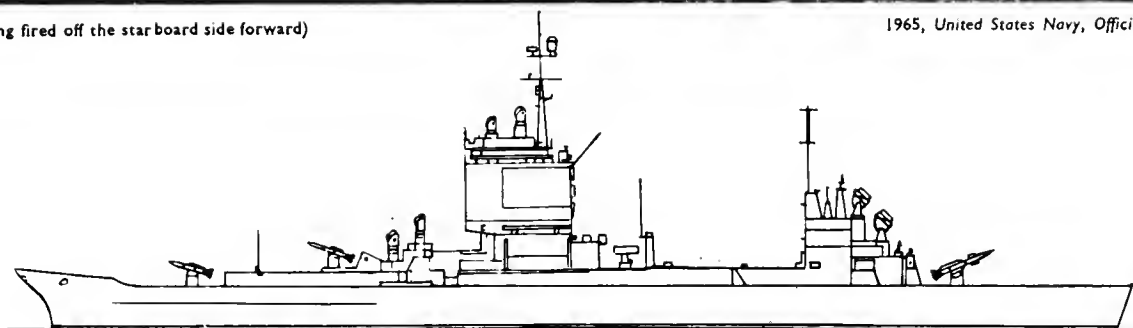
Clemenceau and *Foch* were the first aircraft carriers designed as such and built from the keel up to be completed in France. Said to be a very successful intermediate or light fleet type of aircraft carriers.



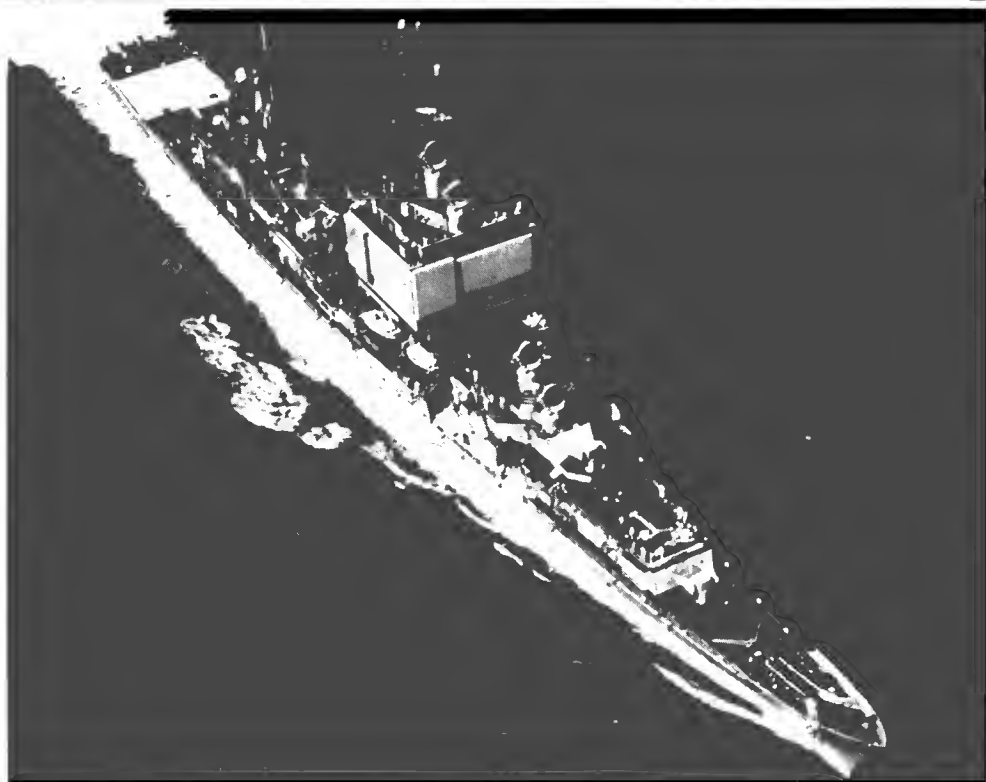
LONG BEACH (No. 1 "Terrier" being fired off the starboard side forward)

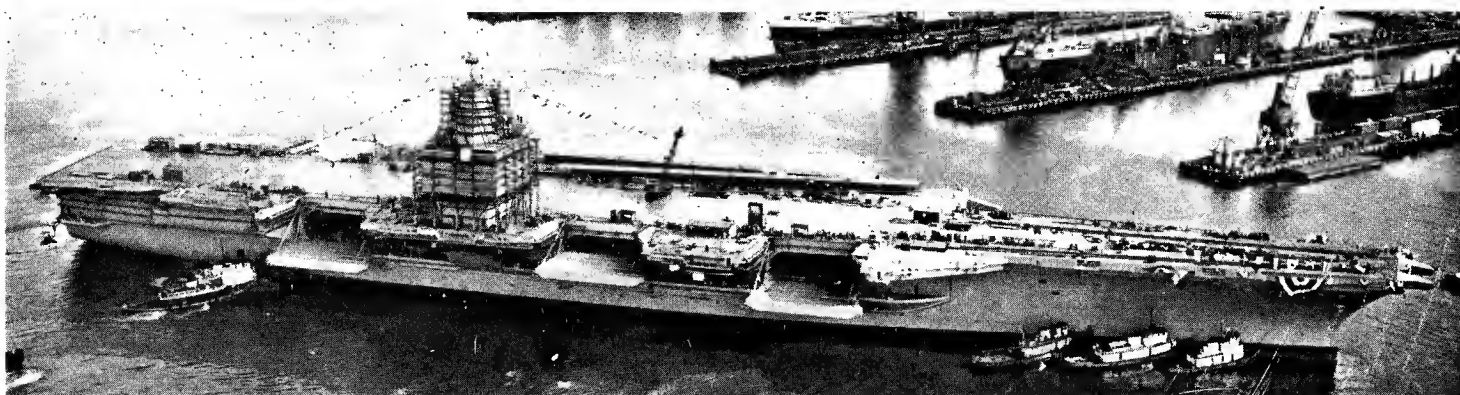
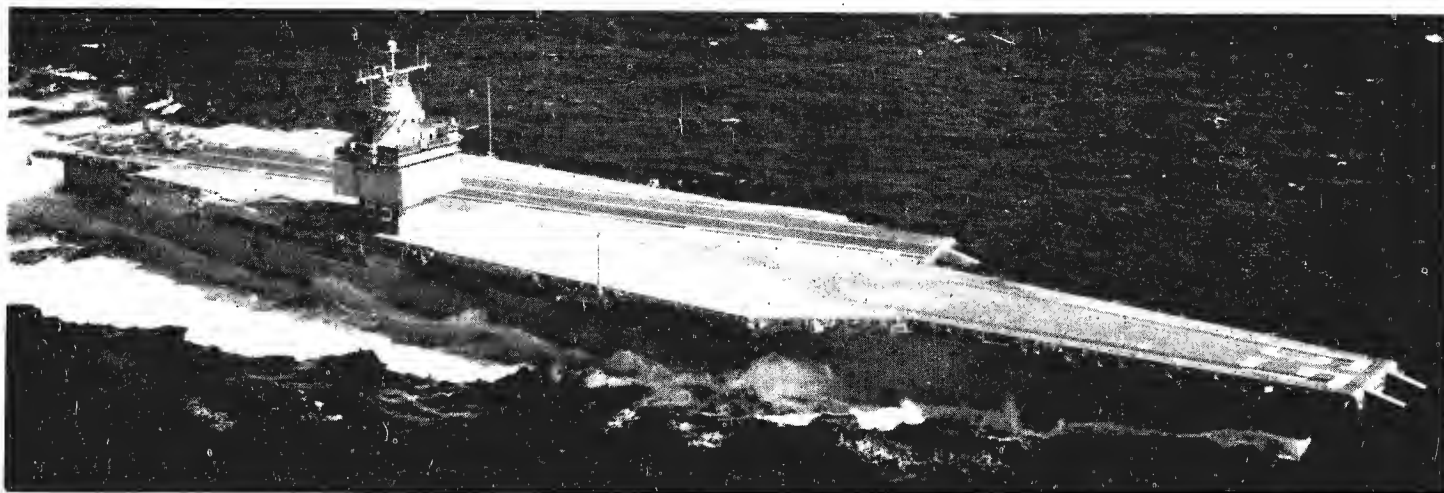
1965, United States Navy, Official

1959



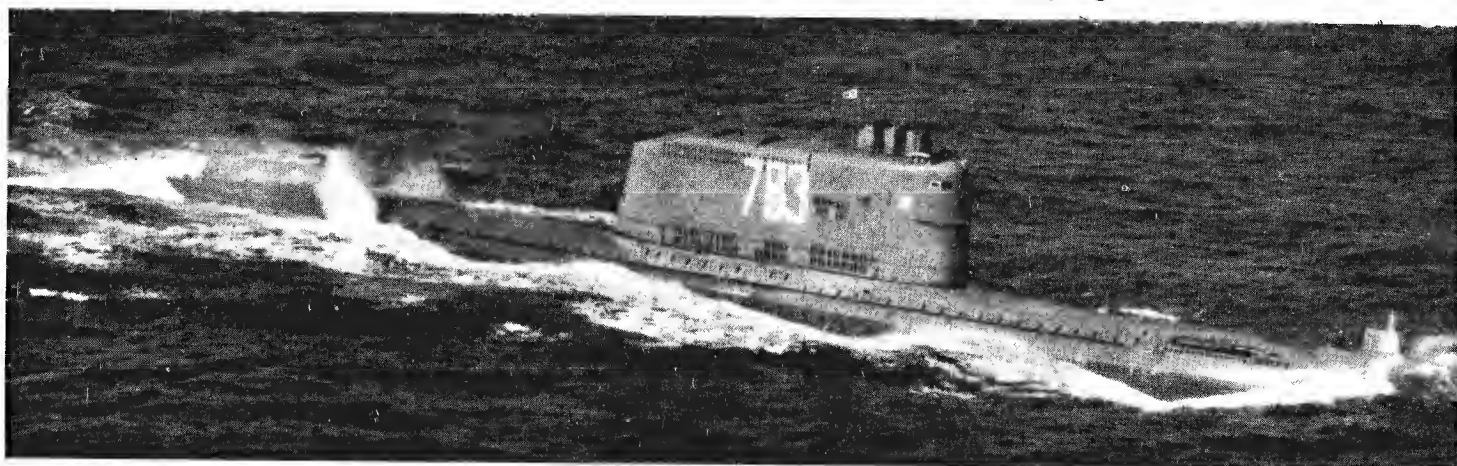
Long Beach scores several "firsts" for the U.S. Navy. She is the first ship to be designed and constructed from the keel up as a cruiser since the end of the Second World War, the first surface ship to be armed with a main battery of guided missiles and powered by a nuclear machinery plant, and the first nuclear powered surface fighting ship in the world.



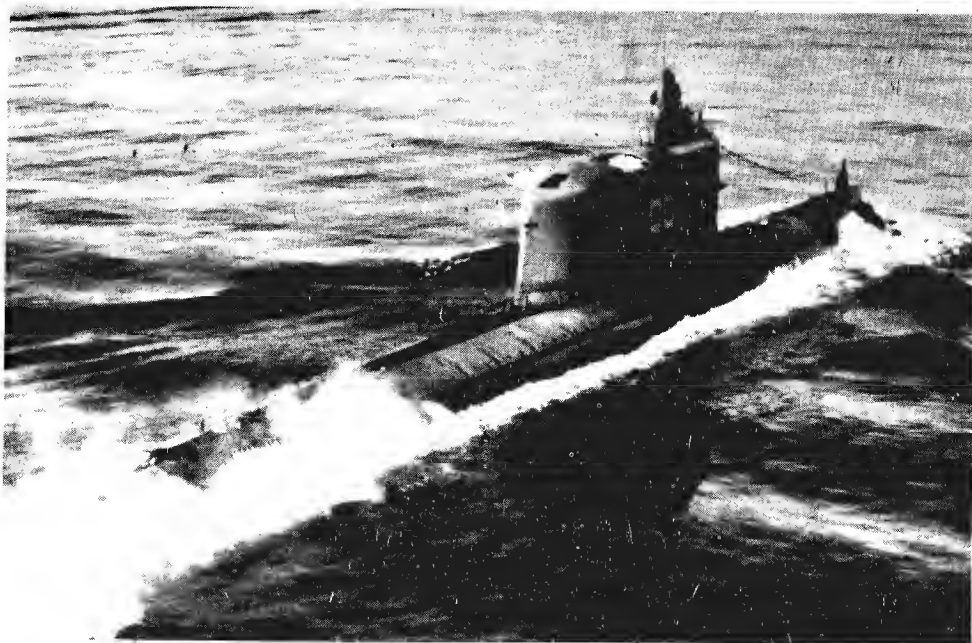


1960

The U.S.S. *Enterprise* has been described as the largest mobile structure ever built by man. This largest aircraft carrier built by any navy is also the first nuclear powered aircraft carrier ever built. Three more nuclear powered aircraft carriers, however, are in present or future new construction programmes.



"G" Class Guided Missile Submarine (Soviet)



1962

The U.S.S.R. is rapidly coming up behind the U.S.A. in the production of missile firing submarines. There are several variants, as a perusal of the Soviet section of this edition shows.

The modern corvette *Kromantse*, built for Ghana, is a latter-day concept for navies who cannot afford bigger and more costly warships. More sophisticated and slightly larger designs have been formulated by the enterprising British firm who supply similar fast types, representing a big punch from a small hull, to several other navies.

1963



KROMANTSE

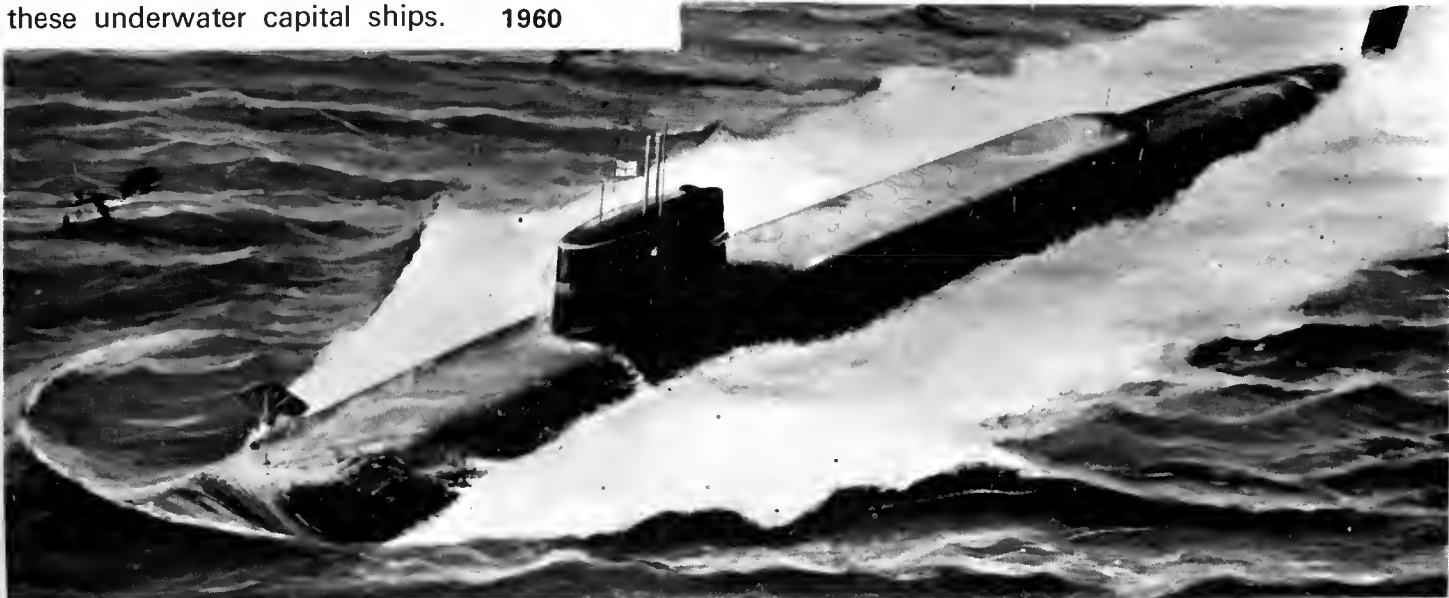
1965, Ghana Navy, Official



Amatsukaze was the largest naval vessel completed in Japan since the end of the Second World War, and the first to be armed with guided missiles. She was completed in little over two years, a creditable task for a prototype of this size and complexity.

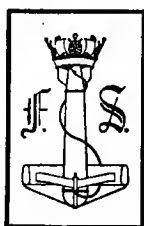


Dreadnought was the prototype British nuclear powered submarine. Since she was completed in 1963, several larger nuclear submarines have been built—*Valiant* and *Warspite*, and, the highlight of 1967, the completion for trials of the Royal Navy's first nuclear powered ballistic missile armed submarine *Resolution* whose sister ship *Renown* was launched during the year, and two more will follow : *Repulse* and *Revenge*, all, be it noted, the names of famous battleships of the past and indicative of the size and importance of these underwater capital ships. 1960



JANE'S FIGHTING SHIPS 1967 - 68

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Naval Aircraft	487
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ALBANIA

Strength of Fleet

- 4 Submarines
2 Fleet Minesweepers
- 6 Inshore Minesweepers
12 Motor Torpedo Boats
- 1 Degaussing Ship
1 Oiler
- 16 Coastal Patrol Craft
10 Small Auxiliaries

SUBMARINES

4 Ex-U.S.S.R. "W" Class

Displacement, tons	1 030 surface; 1 180 submerged
Dimensions, feet	240 × 22 × 15
Tubes	6—21 in (4 bow, 2 stern)
Main engines	Diesels; 4 000 bhp = 17 knots surface Electric motors; 2 500 hp = 15 knots submerged

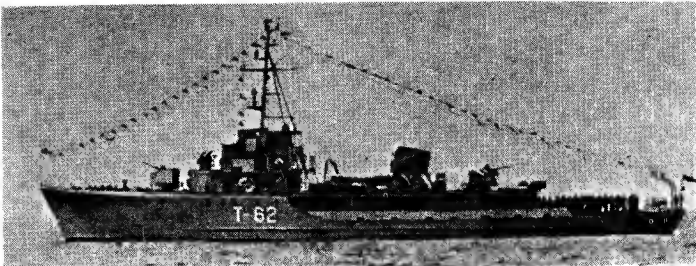
Four "W" class submarines have been transferred from the USSR. For photographs see USSR section.

FLEET MINESWEEPERS

2 Ex-U.S.S.R. "T 43" Class

Displacement, tons	500 standard; 600 full load
Dimensions, feet	200 × 27.5 × 9
Guns	4—37 mm AA; 8—13 mm AA MG
Main engines	Diesels; 2 shafts; speed = 18 knots

"T 43" class fleet minesweepers acquired from the USSR in 1960.



"T 43" Class

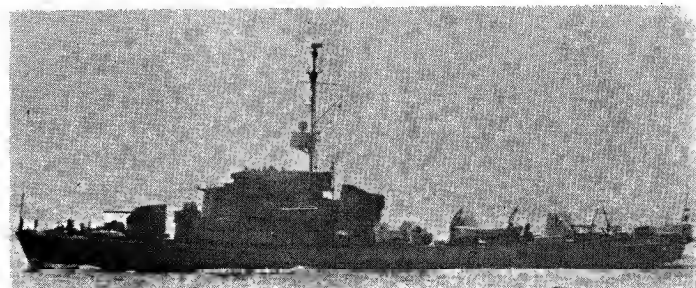
Ex-USSR

PATROL VESSELS

4 Ex-U.S.S.R. "Kronstadt" Class

191	192	502	504
Displacement, tons	300 standard; 350 full load		
Dimensions, feet	167.3 × 19.3 × 9		
Guns	1—3.9 in; 2—37 mm AA; 3—20 mm AA		
A/S weapons	Depth charge projectors		
Main engines	Diesels; 2 shafts = 23 knots		

"Kronstadt" class submarine chasers. Fitted for minelaying. Four were transferred in 1958, but two of these were exchanged for newer vessels in 1960.



"KRONSTADT" Class

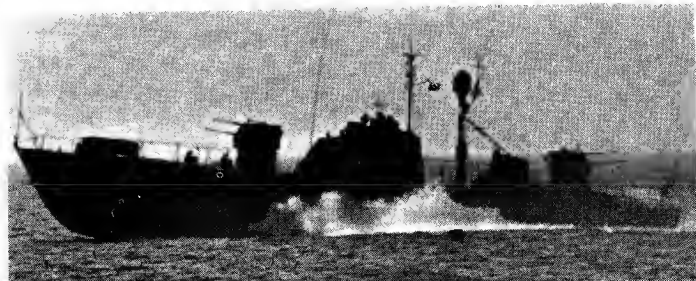
Ex-USSR

MOTOR TORPEDO BOATS

12 Ex-U.S.S.R. "P-4" Class

Displacement, tons	50
Dimensions, feet	85.3 × 20 × 6
Guns	4—25 mm AA MG
Tubes	2—18 in
Main engines	Diesels; 2 000 bhp = 42 knots

Soviet built fast patrol boats acquired in 1955. It is reported that there are 12 motor torpedo boats in the Albanian Navy, all of the Soviet P-4 class.



"P-4" Class

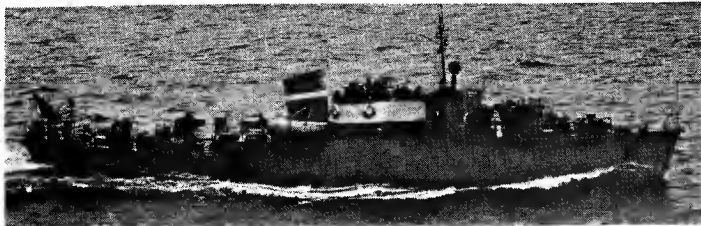
Ex-USSR

INSHORE MINESWEEPERS

6 Ex-U.S.S.R. "T 301" Class

Displacement, tons	130 standard; 180 full load
Dimensions, feet	100 × 16 × 4.5
Guns	2—37 mm AA; 2—25 mm AA
Main engines	Diesels; 2 shafts; 480 bhp = 10 knots

"T 301" class inshore minesweepers acquired from the USSR in 1957-60. Another photograph of "T 301" class appears in the 1962-63 edition.



"T 301" Class

Ex-USSR

DISPOSALS

The former Yugoslavian mining tenders and inshore minesweepers, *Pasman* (ex-*Mosor*) and *Ugliano* (ex-*Marjan*), later used as small minelayers, were scrapped in 1967. The three former Soviet minesweeping boats of the "KM 4" class were stricken from the list in 1967.

DEGAUSSING SHIP

1 Ex-U.S.S.R. "Sekstan" Class

Dimensions, feet	134 × 40 × 14 max
------------------	-------------------

Transferred from the USSR. Built in Finland in 1956

CONVERSION. The "Atrek" class submarine tender transferred from USSR in 1961 as a depot ship has been converted into a merchant ship.

OILER

1 Ex-U.S.S.R. "Khobi" Class

NDALDHUT DAINANI

Measurements, tons	1 600 deadweight
Dimensions, feet	220 × 33 × 15 max
Main engines	2 diesels; 1 600 bhp = 12 knots

Transferred from the USSR. Launched in 1956

In addition to the above there are reported to be 16 small coastal patrol craft and a number of other smaller auxiliaries.

ALGERIA
COASTAL MINESWEEPERS

SIDI FRADJ (ex-Darfour)

Displacement, tons	215 standard; 270 full load
Dimensions, feet	136 oa × 24.5 × 6
Guns	1—3 in; 2—20 mm AA
Main engines	Diesels; 1 000 bhp = 13 knots

Two ex-US BYMS type coastal minesweepers were presented to Algeria by Egypt to form the nucleus of the new Algerian Navy. Both *Darfour* (ex-BYMS 2041) and *Tor* (ex-BYMS 2175) arrived in Algiers on 4 Nov 1962, being officially handed over on 6 Nov and renamed *Sidi Fradj* and *Djebel Aures*, respectively, but the latter was wrecked off Algiers in Apr 1963.



SIDI FRADJ

Ex-UAR

MISSILE PATROL BOATS

4 Ex-U.S.S.R. "Komar" Class

Acquired in 1967. For particulars see USSR section.

It is reported that there are also eight motor torpedo boats (2 ex-Egyptian and 6 ex-Soviet), and an ex-Soviet trawler of the "Sekstan" type.

ARGENTINA

Administration

Secretary of Marine:
Vicealmirante Manuel A. Pita

Chief of Naval Operations:
Almirante Benigno I. M. Varela

Commander-in-Chief, Sea-going Fleet.
Contraalmirante Jorge Alberto Boffi

Diplomatic Representation

*Chief of Naval Commission in Europe and
Naval Attaché in London:*
Captain Julio A. Acuña

Naval Attaché in Washington:
Contraalmirante Pedro A. J. Gnani

Strength of Fleet

- 1 Aircraft Carrier
- 2 Submarines (Conventionally Powered)
- 3 Cruisers
- 11 Destroyers
- 3 Frigates
- 3 Corvettes
- 10 Coastal Minesweepers
- 1 Motor Torpedo Boat
- 8 Patrol Vessels
- 3 Survey Ships
- 7 Landing Ships
- 3 Landing Craft
- 1 Salvage Vessel
- 2 Training Ships
- 5 Transports
- 4 Oilers
- 1 Icebreaker (Antarctic Research)
- 10 Tugs

Ships

The names of all Argentine warships and naval auxiliary vessels are prefaced by "A.R.A.". (Armada Republica Argentina).

Personnel

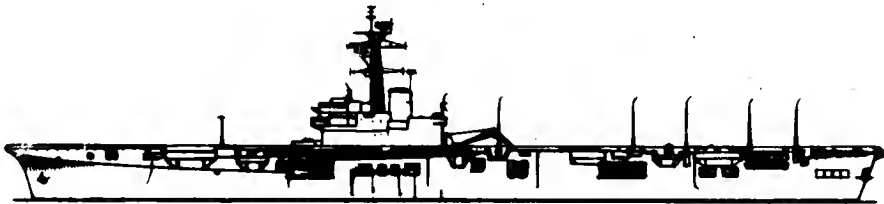
1967: 2,300 officers, 31,000 ratings (including 15,000 conscripts).

Mercantile Marine

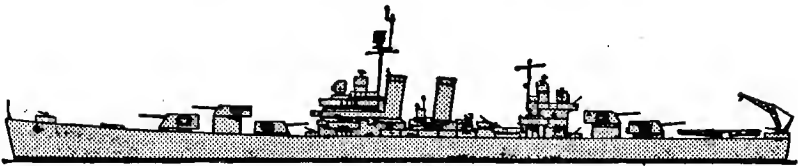
Lloyd's Register of Shipping:
322 vessels of 1,279,439 tons gross

Silhouettes

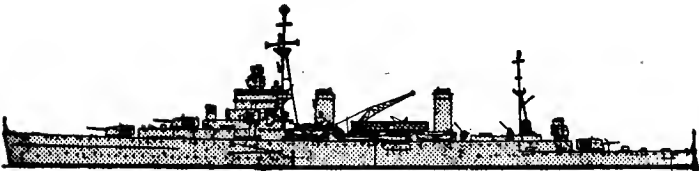
Scale: 150 feet = 1 inch



INDEPENDENCIA



GENERAL BELGRANO, 9 DE JULIO



LA ARGENTINA (catapult now removed)



BROWN, ESPORA, ROSALES



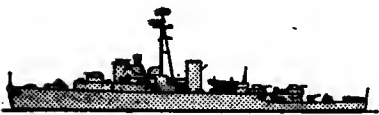
BUENOS AIRES Class



SARANDI



KING, MURATURE



AZOPARDO, PIEDRABUENA



COMODORO AUGUSTO LASSERE



REPUBLICA

AIRCRAFT CARRIERS (Portaviones)

Name	Deck No.	Builders	Laid down	Launched	Completed
INDEPENDENCIA (ex-HMS Warrior)	V 1 (Formerly letter J)	Harland & Wolff, Ltd, Belfast	12 Dec 1942	20 May 1944	24 Jan 1946

1 Ex-British "Colossus" Class

Displacement, tons	14 000 standard; 18 400 normal; 19 540 full load
Length, feet (metres)	630 (192.0) pp; 695 (211.8) oa
Beam, feet (metres)	80 (24.4)
Draught, feet (metres)	21.3 (6.5) mean; 23.5 (7.2) max
Width feet (metres)	118 (36.0) oa
Flight deck:	
Length, feet (metres)	*690 (210.3)
Width feet (metres)	80 (24.4)
Height above wl feet, (metres)	39 (11.9)
Aircraft	Capacity 21
Guns, AA	8—40 mm
Boilers	4 Admiralty 3-drum type, working pressure 400 psi (28.1 kg/cm²) Max superheat 700°F (370°C) Parsons geared turbines
Main engines	40 000 shp; 2 shafts
Speed, knots	25 designed; 24.25 sea speed
Radius, miles	12 000 at 14 knots 6 200 at 23 knots
Oil fuel (tons)	3 200
Complement	1 076 (peace); 1 300 (war)



INDEPENDENCIA

Argentine Navy, Official

Lent to the Royal Canadian Navy from 1946 to 1948. Served in the British Navy from 1948 to 1958. Modernised in 1952-53 with lattice foremast and extended and enlarged bridgework. Again modernised in 1955-56 with the partially angled flight deck and improved arrestor gear. Acted as headquarters ship in the Christmas Island Atomic experiments from Feb to Oct 1957. Negotiations for the sale of the ship to the Argentine Government were concluded by the British Government in July 1958. Sailed from Portsmouth to Argentina on 10 Dec 1958. Renamed *Independencia* at Puerto Belgrano naval base on 26 Jan 1959. Insulated for tropical service and partially air-conditioned.

ENGINEERING. Engines and boilers are arranged en echelon, the two propelling machinery spaces having one set of turbines and two boilers installed side by side in each space, on the unit system, so that the starboard propeller shaft is longer than the port shaft. Maximum speed is 25 knots at 225 revolutions per minute. Economical speed is 15 knots at 120 revolutions per minute.

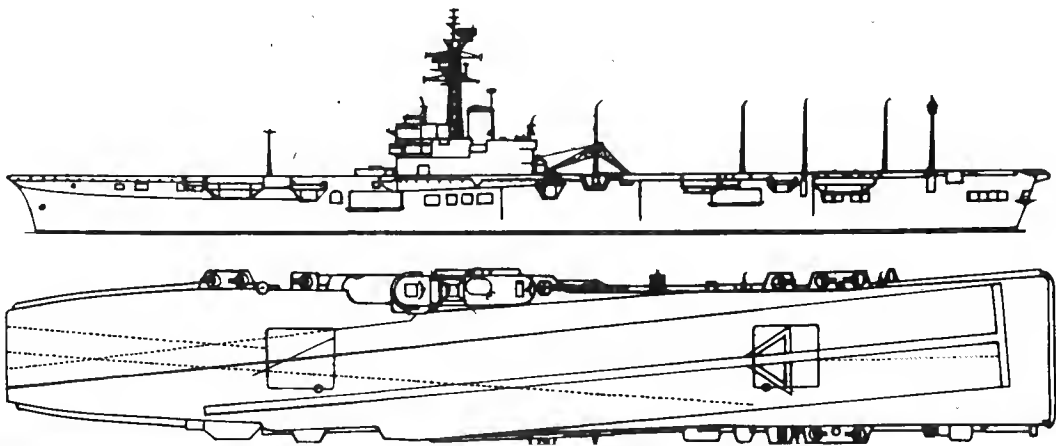
HANGAR. Dimensions of hangar are: Length, 445 feet; width, 52 feet; clear depth, 17.5 feet. Dimensions of aircraft lifts are: 45 feet by 34 feet.

DRAWING
Port elevation and plan. Scale: 128 feet = 1 inch.

CONSTRUCTION. The original flight deck has been strengthened to take aircraft of over 8 tons in weight. Sponsons can be dismantled to the extent of 3.5 feet on either side if necessary to allow passage through the Panama Canal. Mercantile type hull. Built to Lloyd's specification up to main deck with the original intention of converting to commercial service after the Second World War. Damage control: No great measure of vertical sub-division on the sandwich system as it was reckoned that it is better for ships to settle evenly in the event of damage and flooding than to foster capsizing.

OPERATIONAL. Ten arrestor wires to take 15 500 lb aircraft up to 60 knots. Single track catapult for launching 20 000 lb aircraft at 60 knots. Catapult accelerator gear port side forward.

PHOTOGRAPHS. A port surface view appears in the 1957-58 to 1963-64 editions and a port bow oblique aerial view in the 1959-60 to 1963-64 editions, a starboard bow oblique aerial view in the 1964-65 and 1965-66 editions, port quarter oblique aerial view in 1966-67 edition.



INDEPENDENCIA

1964, Argentine Navy, Official

SUBMARINES

Name	No.	Builders	Launched	Completed	Transferred
SANTA FE (ex-USS <i>Lamprey</i> , SS 372)	S.11	Manitowoc Shipbuilding Company	18 June 1944	17 Nov 1944	27 July 1960
SANTIAGO DEL ESTERO (ex-USS <i>Macabi</i> , SS 375)	S 12	Manitowoc Shipbuilding Company	19 Sep 1944	29 Mar 1945	11 Aug 1960

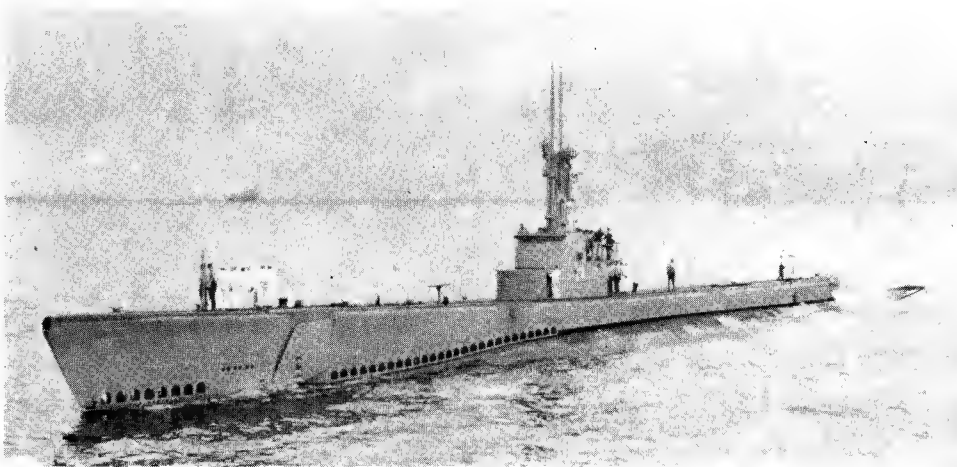
2 Ex-U.S. "Balao" Class

Displacement, tons	1 526 standard; 1 816 surface; 2 425 submerged
Length, feet (metres)	311.5 (94.9)
Beam, feet (metres)	27 (8.2)
Draught, feet (metres)	17 (5.2)
Torpedo tubes	10—21 in (533 mm); 6 bow, 4 stern. 24 Mk 14 torpedoes
Main engines	6 500 hp GM 2-stroke diesels (surface); 4 610 hp electric motors (submerged)
Speed, knots	20 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	82

Former United States submarines transferred from the USA to Argentina at Mare Island Naval Shipyard, San Francisco, in 1960 after having been refitted. Have two engine rooms instead of one to reduce size of Compartments.

PHOTOGRAPHS. A photograph of *Santiago del Estero* appears in the 1962-63 to 1964-65 editions.

DISPOSALS
The old submarines *Salta* and *Santiago del Estero* were deleted from list in May 1960, and sister ship *Santa Fe* in 1957.



SANTA FE

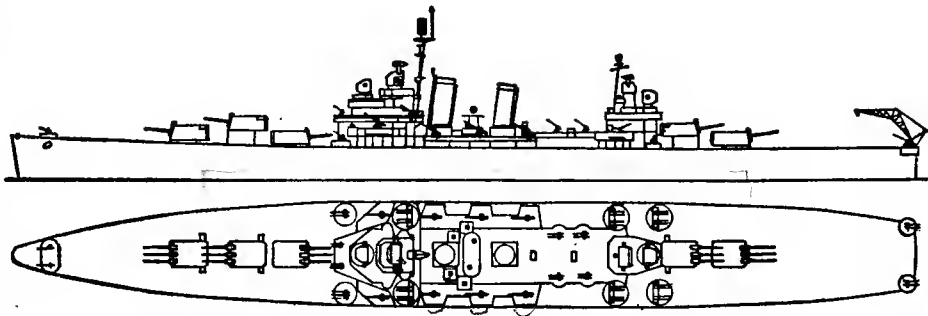
1965, Argentine Navy Official

CRUISERS

Name	No.	Builders	Laid down	Launched	Completed
GENERAL BELGRANO (ex-17 de Octubre, ex-Phoenix, CL 46)	4	New York S.B. Corp Camden	15 Apr 1935	12 Mar 1938	18 Mar 1939
NUOVE DE JULIO (ex-Boise, CL 47)	5	Newport News S.B. & D.D. Co	1 Apr 1935	3 Dec 1936	1 Feb 1939

2 Ex-U.S. "Brooklyn" Class

Displacement, tons	Gen. Belgrano: 10 800 standard; 12 650 normal; 13 645 full load Nueve de Julio: 10 500 standard 12 300 normal; 13 645 full load
Length, feet (metres)	608.3 (185.4) oa
Beam, feet (metres)	69 (21.0)
Draught, feet (metres)	24 (7.3) max
Aircraft	2 helicopters
Guns, surface	15—6 in (153 mm) 47 cal; 8—5 in (127 mm) 25 cal.
Guns, AA	28—40 mm; 16—20 mm;
Guns, saluting	4—47 mm
Armour	Belt 4 in—1½ in (100—38 mm) Decks 3 in+2 in (76+51 mm) Turrets 5 in—3 in (127—76 mm) Conning Tower 8 in (203 mm)
Boilers	8 Babcock & Wilcox Express type
Main Engines	Westinghouse geared turbines 100 000 shp; 4 shafts
Speed, knots	32.5
Radius, miles	7 600 at 15 knots
Oil fuel (tons)	2 200
Complement	1 200



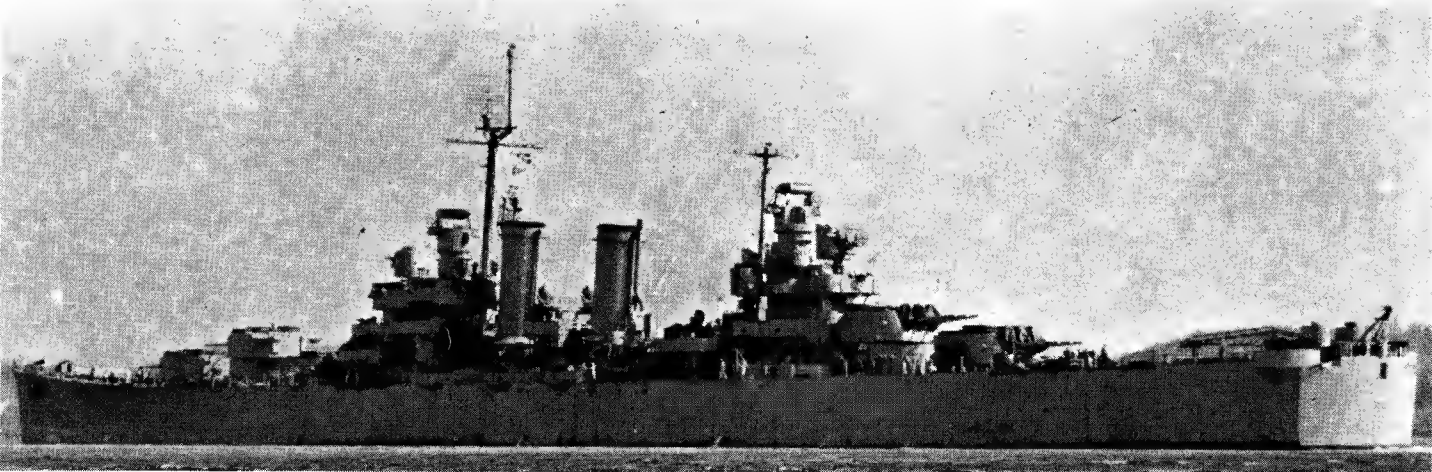
Former "light" cruisers of the United States Navy "Brooklyn" class. Superstructure was reduced, bulges added, beam increased, and mainmast derricks and catapults removed. Purchased from the United States in 1951 at a cost of \$7 800 000 representing 10 per cent of their original cost (\$37 000 000) plus the expense of reconditioning them. Both were transferred to the Argentine Navy on 12 Apr 1951. *General Belgrano* was commissioned under the name *17 de Octubre* at Philadelphia on 17 Oct 1951. *9 de Julio* was commissioned into the Argentine Navy at Philadelphia on 11 Mar 1952.

PHOTOGRAPHS. A starboard bow aerial view of *9 de Julio* appears in the 1954-55 to 1958-59 editions, a large port quarter surface view of *9 de Julio* in the 1957-58 edition, a port broadside view of *General Belgrano* in the 1957-58 to 1963-64 editions, and a starboard broadside surface view of *9 de Julio* in the 1964-65 and 1965-66 editions.

HISTORICAL. *9 de Julio* refers to 9 July, 1816, when the Argentine provinces signed the Declaration of Independence. *17 de Octubre* was renamed *General Belgrano* in 1956 following the overthrow of President Peron the year before.

DRAWING
Port elevation and plan. Scale: 128 feet = 1 inch.

HANGAR. The hangar in the hull right aft could accommodate one helicopter together with engine spare and duplicate parts, though 4 aircraft was the original complement. The incorporation of this hangar resulted in a very wide and nearly flat counter and high free-board aft and also gave the after guns higher command. Above the hangar a revolving crane was placed at the stern extremity overhanging the hangar hatch. The two aircraft catapults, originally mounted above the hangar as far outboard as possible, the aircraft and the crane, were removed.



9 DE JULIO

Added 1966

	Name	Builders	Laid down	Launched	Completed
	LA ARGENTINA	Vickers-Armstrongs Ltd, Barrow-in Furness	Jan 1936	16 Mar 1937	31 Jan 1939
Displacement, tons	6 000 standard ; 7 610 normal 8 630 full load				
Length, feet (metres)	510 (155.5) pp; 541.2 (164.9) oa				
Beam, feet (metres)	56.5 (17.2)				
Draught, feet (metres)	16.5 (5.0) max				
Guns, surface	9—6 in (153 mm)				
Guns, AA	4—47 mm; 14—40 mm				
Torpedo tubes	6—21 in (533 mm), tripled				
Armour	Side and C.T. 3 in (76 mm); deck and gunhouses 2 in (51 mm)				
Boilers	4 Yarrow; 300 psi (21 kg/cm²)				
Main engines	Parsons geared turbines 54 000 shp ; 3 shafts				
Speed, knots	30				
Radius, miles	7 500 at 12 knots				
Oil fuel (tons)	1 500				
Complement	800				

Designed as Training Cruiser. Cost 6 000 000 gold pesos (about £1 750 000).

GUNNERY. Original 4 inch guns were removed in 1950 and 40 mm guns added.

DRAWING. Port elevation and plan. Catapult and crane have been removed. Scale 12B feet = 1 inch.



LA ARGENTINA

1967, courtesy Chris Meyer

DESTROYERS

Name	No.	Builders	Laid down	Launched	Completed
BROWN (ex-USS Heerman, DD 532)	D 20	Bethlehem Steel Co, San Francisco	B May 1942	5 Dec 1942	6 July 1943
ESPORA (ex-USS Dartch, DD 670)	D 21	Federal S.B. & D.D. Co, Port Newark	1942	20 June 1943	16 July 1943
ROSALES (ex-USS Stembel, DD 644)	D 22	Bath Iron Works Corporation, Bath, Maine	21 Dec 1942	8 May 1943	7 Aug 1943
(ex-USS Charles J. Badger, DD 657)		Bethlehem Steel Co, Staten Island	1942	3 Apr 1943	23 July 1943
(ex-USS Hickox, DD 673)		Federal S.B. & D.D. Co, Port Newark	1942	4 July 1943	10 Sep 1943

3+2 Ex-U.S. "Fletcher" Class

Displacement, tons	2 100 standard ; 3 050 full load
Length, feet (metres)	376.5 (114.8) oa
Beam, feet (metres)	39.5 (12.0)
Draught, feet (metres)	12.2 (3.7) mean; 18 (5.5) max
Guns, surface	4—5 in (127 mm) 38 cal.
Guns, AA	6—3 in (76 mm) 50 cal.
Torpedo tubes	5—21 in (533 mm) quintupled
A/S	2 fixed Hedgehogs; 1 DC rack
A/S torpedo racks	2 side-launching
Boilers	4 Babcock & Wilcox
Main engines	2 sets GE geared turbines 60 000 shp; 2 shafts
Speed, knots	35
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	300

Brown, Espora and Rosales were transferred to the Argentine Navy on 1 Aug 1961. Espora and the two scheduled for transfer in 1967 are of the later "Fletcher" class.

PHOTOGRAPHS. A photograph of Rosales appears in the 1962-63 to 1964-65 editions.



BROWN

1965, Argentine Navy, Official

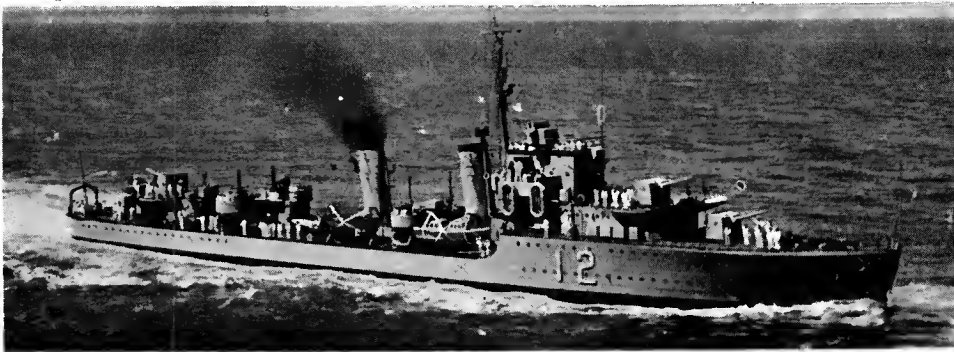
6 "Buenos Aires" Class

Displacement, tons	1 375 standard; 1 820 to 1 850 normal; 1 980 to 2 010 full load
Length, feet (metres)	312 (95.1) pp; 320 (97.5) wl; 323 (98.5) oa
Beam, feet (metres)	34.8 (10.6)
Draught, feet (metres)	10.7 (3.3) mean.
Guns, surface	4—4.7 in (120 mm)
Guns, AA	6—40 mm; 5 MG
A/S	4—DCT
Torpedo tubes	4—21 in (533 mm) quadrupled
Boilers	3 three-drum type
Main engines	Parsons geared turbines 34 000 shp; 2 shafts
Speed, knots	35
Radius, miles	4 100 at 14 knots
Oil fuel (tons)	450
Complement	200

All laid down in 1936 and completed in Mar-Oct 1938. Corrientes of this class was lost by collision with the cruiser Almirante Brown on 3 Oct 1941. Classification changed from Exploradores to Torpederos in 1952 and to Destructoros in 1957. Tubes were removed in 1956.

PHOTOGRAPHS. A photograph of Santa Cruz appears in the 1952-53 to 1956-57 editions, of San Juan in the 1953-54 to 1958-59 editions, of Entre Rios in 1957-58 to 1963-64, of Buenos Aires in 1964-65 to 1966-67.

Name	No.	Builders	Launched
Buenos Aires	D 6	Vickers-Armstrongs Ltd, Barrow-in-Furness	21 Sep 1937
Entre Rios	D 7	Vickers-Armstrongs Ltd, Barrow-in-Furness	21 Sep 1937
Misiones	D 11	Cammell Laird & Co Ltd, Birkenhead	23 Sep 1937
San Juan	D 9	John Brown & Co Ltd, Clydebank	24 June 1937
San Luis	D 10	John Brown & Co Ltd, Clydebank	24 Aug 1937
Santa Cruz	D 12	Cammell Laird & Co Ltd, Birkenhead	3 Nov 1937



SANTA CRUZ

1967, Argentine Navy, Official

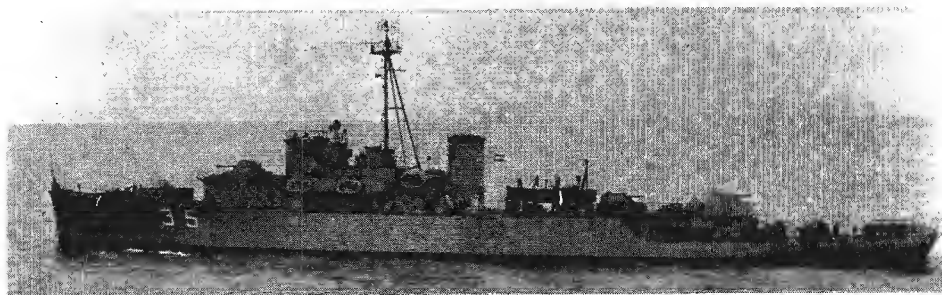
FRIGATES

2 "Azopardo" Class

Displacement, tons	1 160 standard; 1 220 normal; 1 400 full load
Length, feet (metres)	279 (85.7)
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	10 (3.0)
Guns, surface	1—4.1 in (105 mm)
Guns, AA	6—40 mm
A/S	1 Hedgehog; 4 DC mortars
Boilers	2 water tube 3-drum type
Main engines	2 Parsons steam turbines 5 000 shp; 2 shafts
Speed, knots	20
Radius, miles	2 300
Oil fuel (tons)	340
Complement	167

Both built at Astillero Nav. Rio Santiago. Improved "King" type. *Azopardo* is named after the Argentine naval hero.

Name	No.	Builders	Laid down	Launched	Completed
AZOPARDO	P 35	Astillero Nav. Rio Santiago	Nov 1950	11 Dec 1953	7 July 1957
PIEDRABUENA	P 36	Astillero Nav. Rio Santiago	Nov 1950	17 Dec 1954	16 Dec 1958



AZOPARDO 1966, Argentine Navy, Official

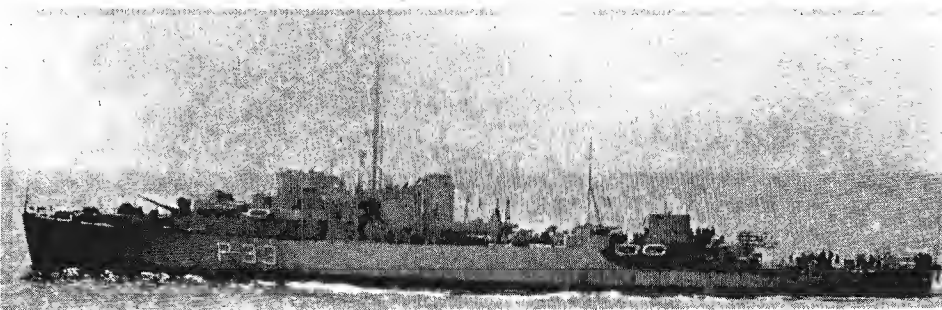
Name	No.	Builder	Laid down	Launched	Completed
SARANDI (ex-USS <i>Uniontown</i> , ex- <i>Chattanooga</i> , PF 65)	P 33	Leatham D. Smith S.B. Co, Sturgeon Bay, Wis.	21 Apr 1943	7 Aug 1943	15 Sep 1944

1 Ex-U.S. PF Type

Displacement, tons	1 445 standard; 1 920 normal; 2 415 full load
Length, feet (metres)	285.5 (87.2) wl; 304 (92.7) oa
Beam, feet (metres)	37.5 (10.1)
Draught, feet (metres)	13.7 (4.2)
Guns, surface	2—4.1 in (105 mm)
Guns, AA	8—40 mm
A/S	1 Hedgehog; 6 DCT
Boilers	2 three-drum type
Main engines	Triple expansion 5 500 ihp; 2 shafts
Speed, knots	19
Radius, miles	7 800 at 12 knots
Oil fuel (tons)	700
Complement	175

Former United States patrol escort of the "Tacoma" class. This ship bears the name of a frigate which saw prominent action during the War of Independence. Sister ship *Santísima Trinidad*, P 34 (ex-HMS *Calcos*, ex-*Hannam*) was reclassified as a survey ship in 1963 (see next page).

No.	Builder	Laid down	Launched	Completed
P 33	Leatham D. Smith S.B. Co, Sturgeon Bay, Wis.	21 Apr 1943	7 Aug 1943	15 Sep 1944



SARANDI 1960, Argentine Navy, Official

DISPOSALS
Sister ship *Heronia* (ex-USS *Reading*, PF 66) was withdrawn from active service and scrapped in 1966. (ex-USS *Asheville*, PF 1, ex-HMCS *Nadur*, ex-HMS *Adur*) first of the US "Asheville" class (British "River" type) was stricken from the list in 1963. The former United States patrol frigate *Hercules*, P 31,

CORVETTES

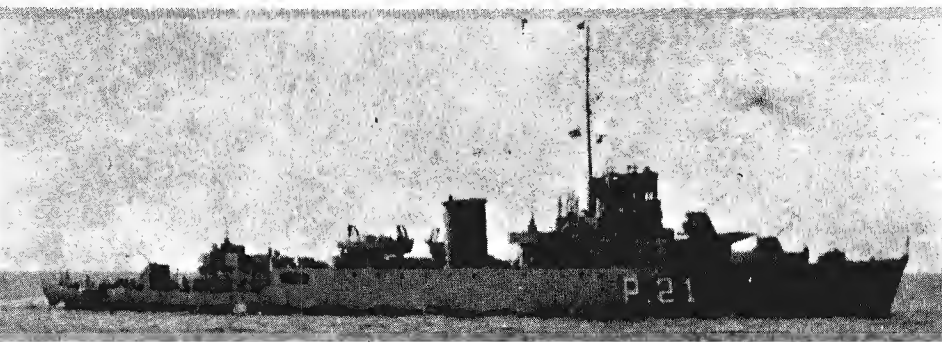
2 "King" Class

Displacement, tons	913 standard; 1 000 normal; 1 032 full load
Length, feet (metres)	252.7 (77.0)
Beam, feet (metres)	29 (8.8)
Draught, feet (metres)	7.5 (2.3)
Guns, surface	3—4.1 (105 mm)
Guns, AA	2—40 mm 8ofors; 2—40 mm
A/S	2—MG 4—DCT
Main engines	2—Werkspoor 4-stroke diesels: 2 500 bhp; 2 shafts
Speed, knots	18
Radius, miles	9 000 at 12 knots
Oil fuel (tons)	90
Complement	130

Both built at Astillero Nav. Rio Santiago. Named after Captain John King, an Irish follower of Admiral Brown, who distinguished himself in the war with Brazil, 1826-28; and Captain Murature, who performed conspicuous service against the Paraguayans at the Battle of Cuevas on Aug. 6 1865.

PHOTOGRAPHS. A photograph of *Murature* appears in the 1964-65 to 1966-67 editions.

Name	No.	Builders	Laid down	Launched	Completed
KING	P 21	Astillero Nav. Rio Santiago	Dec 1938	Dec 1943	28 July 1946
MURATURE	P 20	Astillero Nav. Rio Santiago	June 1938	July 1945	18 Nov 1946



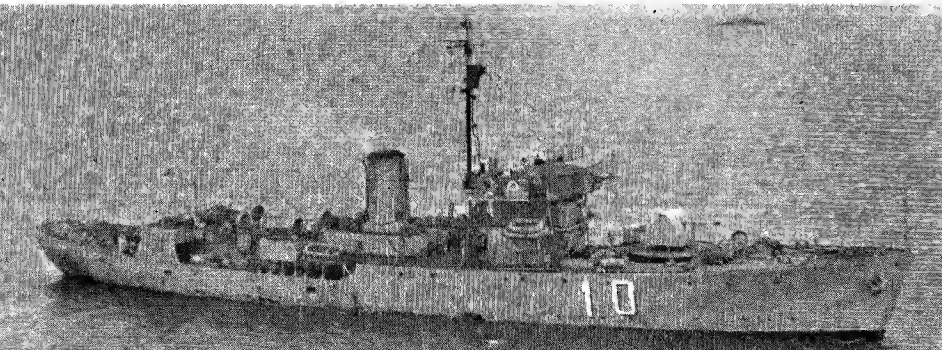
KING 1967, Argentine Navy, Official

1 Ex-British "Flower" Class

Displacement, tons	995 standard; 1 220 normal; 1 375 full load
Length, feet (metres)	206.7 (63.0)
Beam, feet (metres)	34.8 (10.6)
Draught, feet (metres)	18.4 (4.5)
Guns, surface	1—4.1 in (105 mm)
Guns, AA	2—20 mm
A/S	1 Hedgehog; 4-DCT
Boilers	2
Main engines	Triple expansion 2 750 ihp 1 shaft
Speed, knots	16
Radius, miles	6 800 at 10 knots
Oil fuel (tons)	350
Complement	106

Former British modified "Flower" Class corvette (frigate). Transferred in 1949. Perpetuates the name of a corvette which distinguished herself in the War of Independence.

Name	No.	Builders	Launched	Completed
REPUBLICA (ex-HMS <i>Smilax</i> , ex- <i>Tact</i> , ex-PG 98)	P 10	Collingwood Shipyards	24 Dec 1942	21 June 1943



REPUBLICA 1960, Argentine Navy, Official

MINESWEEPERS

4 "Bouchard" Class

Name	No.	Builders	Launched
GRANVILLE	M 4	Rio Santiago Naval Yard	27 Jan. 1937
PY	M 10	Rio Santiago Naval Yard	30 Mar. 1938
ROBINSON	M 3	Hansen & Puccini, San Fernando	18 Aug. 1938
SEVER	M 12	Hansen & Puccini, San Fernando	18 Aug. 1938

Displacements, tons	450 standard; 620 normal; 650 full load
Dimensions, feet	164 pp; 197 oa x 24 x 8.5
Guns	4—40 mm Bofors AA, 2 MG
Main Engines	2 sets MAN 2-cycle diesels. 2 000 bhp = 16 knots
Oil fuel (tons)	50
Radius, miles	3 000 at 10 knots
Complement	70

All laid down in 1935-37. First Argentine warships built in local shipyards. Named after distinguished naval officers (several of British extraction). Carry mines.

DISPOSALS
Drummond, Parker and Spiro of this class were stricken from the list in 1963.

TRANSFER. *Bouchard* of this class was transferred to the Paraguayan Navy in 1964.



PY 1960, Argentine Navy, Official

COASTAL MINESWEEPERS

6 Ex-British "Ton" Class

Displacement, tons	360 standard; 425 full load
Dimensions, feet	140 pp; 153 oa x 28.2 x 8.2
Guns	2—40 mm AA
Main Engines	2 diesels; 2 shafts 3000 bhp = 15 knots

Former British coastal minesweepers of the "Ton" class. Of composite wooden and non-magnetic metal construction. Purchased in 1967. Two converted to mine-hunters.

MOTOR TORPEDO BOAT

P 84	
Displacement, tons	45 standard; 50 full load
Dimensions, feet	71 pp; 78.8 oa x 20 x 4.5
Guns	2—40 mm AA, 2—5 in MG
Dimensions, feet	71 pp; 78.8 oa x 20 x 4.5
Torpedoes	4 torpedo cradles
A/S weapons	2 rocket projectors
Main Engines	3 Packard engines. 4 500 hp = 40 knots
Fuel (tons)	9 aviation spirit
Radius, miles	1 000 at 20 knots
Complement	12

"Higgins" type. Built in New Orleans, USA in 1946. Originally designated as en "LT" series (1 to 9).

DISPOSALS
P 81, P 83, P 85, P 87 and P 89 were officially removed from the List in 1963, and P 82, P 86 and P 88 in 1966.



P 81 Argentine Navy, Official

PATROL VESSELS (Avisos)

TOMPSON (ex-US Sombrero Key)	GOYENA (ex-US Dry Tortugas)
Displacement, tons	1 863 full load
Dimensions, feet	191.3 x 37 x 18
Main engines	2 Enterprise diesels. 2 250 bhp = 12 kts
Oil fuel (tons)	532
Complement	60

Built by Pendleton Shipyard Co., New Orleans. Launched in 1943 and leased to the Argentine Navy in 1965.

Patrol Vessels (Avisos) —continued

COMMANDANTE GENERAL IRIGOYEN (ex-USS <i>Cahuilla</i> , ATF 152)	No. 41
COMMANDANTE GENERAL ZAPOLA (ex-USS <i>Arpaho</i> , ATF 68)	No. 42

Displacement, tons	1 235 standard; 1 675 full load
Dimensions, feet	195 wl; 205 oa x 38.2 x 15.3
Guns	1—3 in; 4—40 mm AA; 2—20 mm AA originally
Main Engines	4 sets diesels with electric drive; 3 000 bhp = 16 knots
Complement	85

Former US fleet ocean tugs of the "Apache" class. Fitted with powerful pumps and other salvage equipment. Both built by Charleston S.B. & D.D. Co., Charleston, S.C. Launched on 2 Nov. 1944 and 22 June 1942, respectively, and completed on 10 Mar. 1945 and 20 Jan. 1943. Transferred to Argentina at San Diego, California, in 1961. Classified as tugs until 1966 when they were re-rated as patrol vessels (avisos).

CHIRIGUANO (ex-US ATA 227)	SANAVIRON (ex-US ATA 228)
DIAGUITA (ex-US ATA 124)	YAMANA (ex-US ATA 126)

Displacement, tons	689 standard; 800 full load
Dimensions, feet	133.7 wl; 143 oa x 34 x 12
Guns	2—20 mm AA
Main Engines	Diesel-electric; 1 850 bhp = 12.5 knots
Oil fuel (tons)	154
Radius, miles	16 700
Complement	49

Former US auxiliary ocean tugs. Built by Levingstone Shipbuilding Co., Orange Texas, USA, in 1945. *Diaguita* and *Yamana* are fitted as rescue ships. All four of above ships bear names of South American Indian tribes. Classified as ocean salvage tugs until 1966 when they were re-rated as patrol vessels (avisos).

SURVEY SHIPS (Buques Oceanograficos)

COMODORO AUGUSTO LASSERE (ex-Santísima Trinidad, P 34, ex-HMS <i>Caicas</i> , ex-Hannam)	No. Q 9
--	---------

Displacement, tons	1 430 standard; 2 415 full load
Dimensions, feet	285.5 wl; 304 oa x 37.5 x 13.7
Guns	2—4.1 in; 8—40 mm, AA
A/S weapons	1 Hedgehog; 6 DCT
Main Engines	Triple expansion; 2 shafts; 5 500 ihp = 19 knots
Boilers	2, of 3-drum type
Oil fuel (tons)	700
Radius, miles	7 800 at 12 knots
Complement	100

Former patrol frigate of the British "Colony" class (United States "Tacoma" type). Built by the Walsh-Kaiser Yard, Providence, RI. Laid down in 1943, launched on 6 Sep. 1943, and completed on 2 Jan 1944. Served in the Argentine Navy as a frigate until 1963, when she was reclassified as a surveying vessel and her name changed from *Santísima Trinidad* to *Comodoro Augusto Lassere*. Officially rated as *Buque de Investigaciones científicas*.



COMODORO AUGUSTO LASSERE 1965, Argentine Navy, Official

CAPITAN CANEPA (ex-HMCS BARRIE)

Displacement, tons	995 standard; 1 265 full load
Dimensions, feet	208 x 33.5 x 16.5
Main Engines	Triple expansion; 2 750 ihp = 15 knots
Boilers	2
Oil fuel (tons)	271
Complement	54

Former Canadian corvette (frigate) of the "Flower" class. Launched in Canada on 12 Nov. 1940. Completed on 12 May 1941. A photograph of *Cepitan Canepe* appears in the 1958-59 to 1964-65 editions.

USHUAIA No. 8 4

Displacement, tons	1 275 standard; 1 500 full load
Dimensions, feet	211 x 31.5 x 11.5
Main Engines	2 sets diesels; 2 shafts; 1 200 bhp = 12.7 knots
Oil fuel (tons)	60
Radius, miles	3 500
Complement	65

Built at Rio Santiago. Launched in 1939. Named after the capital of the territory of Tierra del Fuego. Pennant No. B4. Formerly rated as a transport until 1959, when she was reclassified as a survey ship. She is also a buoy ship for the laying end servicing of buoys and lights.

TANK LANDING SHIPS

CABO SAN BARTOLOME	8DT 1	CABO SAN ISIDRO	8DT 6
CABO SAN GONZALO	8DT 4	CABO SAN PIO	8DT 10
		CABO SAN VICENTE	8DT 14

Displacement, tons	2 366 beaching; 4 080 full load
Dimensions, feet	316 wl; 328 oa; x 50 x 14
Main Engines	2 diesels; 2 shafts; 1 800 bhp = 11 knots
Oil fuel (tons)	700
Radius, miles	9 500 at 9 knots
Complement	80

Ex-US LST's 875, 998, 872, 919, 1108. Built by Puget Sound Bridge and Dredging Co., Seattle, USA. Launched in 1944. Have two rudders. 8DT 5, 8DT 8, BDT 9, and BDT 12, were withdrawn from service in 1958-60, end BDT 2, BDT 7, 8DT 11 and BDT 13 in 1964. *Cabo San Francisco de Paula*, BDT 3 has been used as a store ship since 1966.

MEDIUM LANDING SHIPS

BDM 1	BDM 2
Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa x 33.8 x 6; (8 max)
Main Engines	2 sets diesels; 2 shafts; 2 800 bhp = 13 knots
Oil fuel, tons	170
Radius, miles	4 100 at 12 knots
Complement	60

Former American LSM's 267 and 86, respectively. Pennant Nos. Q 69 and Q 70.

INFANTRY LANDING CRAFT

BDI 1 (Q 54)	BDI 4 (Q 57)	BDI 15 (Q 68)
Displacement, tons	230 light; 387 full load	
Dimensions, feet	153 wl; 159 oa x 23.2 x 5	
Guns	2—20 mm AA (only in BDI 4)	
Main engines	8 sets diesels; 3 200 bhp = 14 knots. Two reversible propellers	
Oil fuel, tons	110	
Radius, miles	6 000 at 12 knots	
Complement	30	

Ex-US Navy LCIL's 583, 606 and 689, BDI 3, BDI 6, BDI B, BDI 9, BDI 11 and BDI 13 were withdrawn from service in 1958. BDI 1 and BDI 4 were given new Q numbers as shown above instead of Q 64 and 67. BDI 10 (Q 63) was converted into an oiler in 1960 and renamed *Punte Lara*. BDI 5, BDI 7, BDI 12 and BDI 14 were officially deleted from the list in 1961, and BDI 2 in 1963.

MINOR LANDING CRAFT. There are also 20 personnel and vehicle landing craft, all ex-US Navy LCPV's numbered EDVP 1, 2, 3, 4, 6, 7, B, 9, 10, 11, 12, 13, 17, 19, 20, 21, 22, 24, 27 and 28. Displacement 12 tons. Dimensions 39.5 x 10.5 x 5.5 feet. Main engines: diesel. Speed 9 knots. Nos. 16, 23, 25 and 26 were withdrawn from service in 1959.



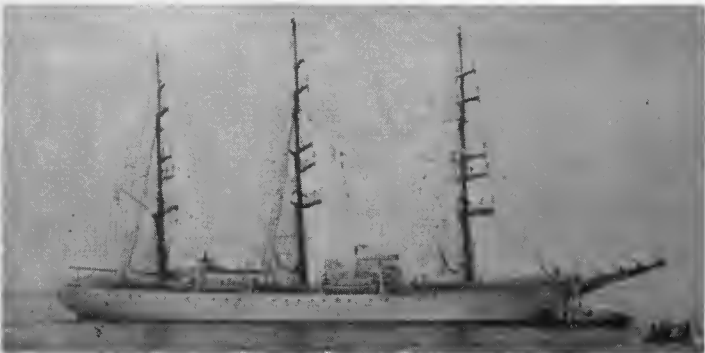
BDI 4 1960, Giorgio Arra

TRAINING SHIPS (Buques Escuela)

LIBERTAD

Displacement, tons	3 025 standard; 3 765 full load
Dimensions, feet	262 wl; 301 oa x 47 x 21.8
Guns	1—3 in; 4—40 mm AA; 4—47 mm saluting
Main engines	2 Sulzer diesels; 2 400 bhp = 13.5 knots
Radius	15 000 miles
Complement	370 (crew) plus 150 cadets

Built in the State-owned shipyards at Rio Santiago. Sealing ship. Thres masts. Launched on 30 June 1956.



LIBERTAD 1967, Hejime Fukaya

MADRYN (ex-Comodoro Rivadavia, ex-San Juan) Q 6

Displacement, tons	843 standard; 970 full load
Dimensions, feet	195 pp; 206.7 oa x 33 x 11.8
Guns	1—3 in
Main engines	Hawthorn-Werkspeer diesel; 1 shaft; 750 bhp = 12 knots
Boiler	1 single-ended Scotch to supply steam to auxiliary machinery
Oil fuel (tons)	88
Radius, miles	7 000
Complement	63

Built by Hawthorn Leslie & Co. Ltd., Hebburn-on-Tyne. Launched on 27 Sep 1927. Delivered in Feb 1928. Survey ship until 1961, when she became a training ship.

TRANSPORTS (Transportes)

BAHIA AGUIRRE	BAHIA BUEN SUCESO	BAHIA THETIS
Displacement, tons	3 100 standard; 5 000 full load	
Dimensions, feet	334.7 x 47 x 13.8	
Guns	2—4.1 in; 2—40 mm 8ofors AA; 2—20 mm AA; 4—47 mm saluting	
Main engines	2 sets Nordberg diesels; 2 shafts; 3 750 bhp = 16 knots	
Oil fuel (tons)	500 (<i>Bahia Thetis</i>); 442 (<i>Bahia Buen Suceso</i>), 355 (<i>Bahia Aguirre</i>)	
Radius, miles	15 000	
Complement	100	

Built in Canada by Halifax shipyards. *Bahia Buen Suceso* was completed at Halifax, Nova Scotia, in June 1950. Nos B 2, B 6 and B 8, respectively. The first two are troop transports, *Bahia Thetis* was used as a training ship and carried guns (see above).



BAHIA THETIS Added 1967, Werner Schiefer

LA PATAIA 8 10

Displacement, tons	3 825 standard; 6 000 full load
Dimensions, feet	335.2 x 50.2 x 23
Main engines	2 sets diesels; 2 shafts; 3 400 bhp = 16 knots
Oil fuel (tons)	500
Radius, miles	15 000
Complement	100

Built in Italy by C. R. del Adriatico (CRDA). Laid down on 25 Apr 1948, launched on 25 June 1949, completed in June 1950, delivered 2 Oct 1951. Troop transport.

DISPOSALS. Sister ships *Le Maire* and *Les Eclaireurs* were scrapped in 1964.



LA PATAIA Added 1964, Argentine Navy, Official

SAN JULIAN (ex-FS 281) B 7

Displacement, tons	930
Dimensions, feet	176 x 32.5 x 11
Main engines	2 sets diesels; 2 shafts; 1 000 bhp = 10 knots
Oil fuel (tons)	75
Complement	40

Ex-US Army small cargo carrier. Built by Wheeler Shipbuilding Corp. Launched in 1944. Pennant No. B7. It was officially stated in May 1960 that this vessel, formerly reted as a transport, was to be converted into a selvege vessel, but in Dec 1961 it was officially stated that she would continue to be a transport ship.

SALVAGE VESSEL (Buque de Salvamento)

GUARDIAMARINA ZICARI (ex-Tehuelche, ex-HMS Kingfisher, ex-King Selvor)

Displacement, tons	1 600
Dimensions, feet	200.2 pp; 216 oa x 37.8 x 13
Main engines	Triple expansion. 2 shafts; 1 500 ihp = 12 knots
Oil fuel (tons)	310
Complement	82

Former British submarine rescue ship. Built as an Admiralty ocean salvage vessel by Wm. Simons & Co. Ltd. Renfrew, Scotland, and laid down on 17 May 1941, launched on 18 May 1942 and completed on 17 July 1942. Converted into a Submarine Rescue Bell and Target Ship in 1953-54. Paid off as Bell Rescua Ship in 1958 and subsequently employed as a Submerine Support Ship and Tender. Purchased from Great Britain in Dec. 1960, and sailed from Chatham to Argentina in Apr 1961, and renamed *Tehuelche*. Again renamed *Guardiamarina Zicari* in Apr 1963. Photograph in 1962-63 to 1966-67 editions.

OILERS (Buques Tanques)

PUNTA MEDANOS B 18

Displacement, tons	14 352 standard; 16 331 full load
Measurement, tons	8 250 deadweight
Dimensions, feet	470 pp; 502 oa x 62 x 28.5
Main engines	Double reduction geared turbines. 2 shafts; 9 500 shp = 18 knots (over 19 knots attained on trials)
Boilers	2 Babcock & Wilcox two-drum integral furnace water-tube
Oil fuel (tons)	1 500
Radius, miles	13 700
Complement	99

Built by Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne. Launched on 20 Feb 1950. Completed on 10 Oct 1950. A unit of the Argentine Navy available as a training vessel for personnel. She embodied experience gained in previous fleet oilers, and was then the finest equipped and fastest of her type afloat. Fitted for fuelling warships at sea. Boilers built under licence by the Wallsend Slipway & Engineering Company. Steam conditions of 400 lb. per sq. in pressure and 750 deg F.



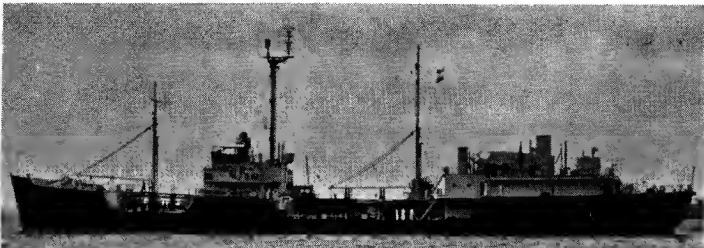
PUNTA MEDANOS Added 1964, Argentine Navy, Official

PUNTA DELGADA (ex-Sugarland, ex-Nanticoke, AOG 66)

Displacement, tons	5 930 standard; 6 090 full load
Dimensions, feet	325 x 48.2 x 20
Main engines	Westinghouse diesel; 1 shaft; 1 400 bhp = 11.5 knots
Oil fuel, (tons)	150
Radius, miles	9 000
Complement	72

Named after geographical location. USMS type T1-M-BT1. Built by St. John's River SB Co. Launched on 7 Apr. 1945.

DISPOSALS
Two sister ships: *Punta Ninfas* (ex-Black Bayou, ex-Michigamme, AOG 65) was scrapped in 1964, and *Punta Loyola* (ex-Capitan, ex-Klickitat, AOG 64) was withdrawn from active service in 1966.



PUNTA Class Official

PUNTA RASA (ex-Salt Creek) B 14

Displacement, tons	2 055 standard; 2 253 full load
Dimensions, feet	221 x 37 x 13.8
Main engines	Diesel; 1 shaft; 800 bhp = 10 knots
Oil fuel (tons)	60
Radius, miles	3 500
Complement	37

Built by Barnes Dulath S.B. Co. Launched in 1943 and completed in 1944. Pennant No. B 14. Commissioned in 1947. Named after Cape. US MC type T1-M-A2.

DISPOSALS
Sister ship *Punta Ciguena* (ex-Sulphur Bluff) was officially deleted from the list in 1961.

PUNTA ALTA B 12

Displacement, tons	1 600 standard; 1 900 full load
Measurement, tons	800 deadweight
Dimensions, feet	210 x 33.8 x 12.5
Main engines	Diesel; 1 shaft; 1 850 bhp = 8 knots
Oil fuel (tons)	146
Radius, miles	4 700

Built at Puerto Belgrano. Launched in 1937. Named after a headland.

BDI TYPE. *Punta Lara* (ex-BDI 10, Q 63, ex-USS LCIL 688) converted to an oiler, was deleted from the list in 1961.

ICEBREAKER (Rompehielos)

GENERAL SAN MARTIN Q 4

Displacement, tons	4 854 standard; 5 301 full load
Measurement, tons	1 600 deadweight
Dimensions, feet	279 x 61 x 21
Guns	1-4 in; 2-40 mm AA Bofors
Aircraft	1 reconnaissance aircraft and 1 helicopter
Main engines	4 diesel-electric; 2 shafts; 7 100 hp = 16 knots
Range, miles	37 000
Oil fuel (tons)	1 100
Complement	160

Built by Seebeck Yard of Weser AG. Launched on 24 June 1954. Completed in Oct 1954. Used by the Antarctic Institute. Fitted for research. Specially insulated against cold



GENERAL SAN MARTIN 1966, Argentine Navy, Official

TUGS (Remolcadores)

GUAYCURU R 33

Displacement, tons	368 full load
Dimensions, feet	107.2 x 24.4 x 12.5
Main engines	Skinner Unaflow engines; 645 ihp = 9 knots
Boilers	Cylindrical (Scotch)
Oil fuel (tons)	52
Radius, miles	2 200 at 7 knots
Complement	14

QUILMES R 32

"Quilmes" class tugs built at Rio Santiago, Argentina, in the State Naval Shipyards. Laid down on 23 Aug and 15 Mar 1956, respectively launched on 27 Dec 1959 and 8 July 1957 and completed on 29 July and 30 Mar 1960.

PEHUENCHE

Displacement, tons	330
Dimensions, feet	105 x 24.7 x 12.5
Main engines	Triple expansion; 600 ihp = 11 knots
Boiler	2
Oil fuel (tons)	36
Radius, miles	1 200
Complement	13

TONOCOTE

Both built in Rio Santiago Naval Yard. Commissioned for service in 1954.

MATACO

Displacement, tons	600
Measurement, tons	339 gross
Dimensions, feet	130.5 pp; 137 wl; 139 oa x 28.5 x 11.5
Main engines	Triple expansion; 2 shafts; 1 200 ihp = 12 knots
Boilers	2
Oil fuel (tons)	95 tons
Radius, miles	3 900
Complement	34

TOBA

Both built by Hawthorn Leslie, Ltd, Hebburn-on-Tyne. Launched on 24 Jan 1928 and 23 Dec 1927, respectively. Both completed in Mar 1928.

HUARPE

Displacement, tons	370
Dimensions, feet	107 x 27.2 x 12
Main engines	Triple expansion; 800 ihp
Boilers	1 cylindrical (Howaldt Werke)
Oil fuel (tons)	58
Complement	13

PUELICHE

Built by Howaldt Werke in 1927. Entered service in the Argentine Navy in 1942.

ONA

Displacement, tons	615
Measurements, tons	345 gross
Dimensions, feet	134.5 x 30 x 11
Main engines	Triple expansion; 1 300 ihp = 12 knots
Boilers	2
Oil fuel (tons)	115
Radius, miles	2 400
Complement	34

QUERANDI

Built by John I. Thornycroft & Co. Ltd., Woolston, Southampton. Launched in 1913.

DISPOSALS
The salvage tug *Ranquel* was withdrawn from service and deleted from the list in May 1960.

The salvage tug *Charrua* (ex-US Army LT 224) was officially stricken from the list in 1963. Her sister ship *Guarani* was lost without trace in the Straits of Magellan on 15 Oct 1958.

ROYAL AUSTRALIAN NAVY

Naval Board

Chairman: Minister for the Navy:
Mr. Donald L. Chipp, MP

First Naval Member and Chief of Naval Staff:
Vice Admiral Sir Alan W. R. McNicoll,
KBE, CB, GM

Second Naval Member and Chief of Naval Personnel:
Rear-Admiral Jack S. Mesley, CBE, MVO,
DSC

Third Naval Member and Chief of Naval Technical Services:
Rear-Admiral Frederick W. Purves, OBE

Fourth Naval Member and Chief of Supply:
Rear-Admiral William D. H. Graham

Secretary, Department of the Navy:
Mr. Samuel Landau, CBE, MA

Senior Appointments

Flag Officer Commanding Australian Fleet:
Rear-Admiral Victor A. Smith, CBE, DSC

Deputy Chief of the Naval Staff:
Rear-Admiral Rickard I. Peek, OBE, DSC

Diplomatic Representation

Australian Naval Representative in London:
Commodore Dacre H. D. Smyth

Naval Attaché in Washington:
Captain John P. Stephenson, RAN

Strength of the Fleet

- 2 Aircraft Carriers (1 as Fast Transport)
- 1 Submarine (Diesel Powered)
- 9 Destroyers (3 armed with guided missiles)
- 7 Frigates
- 6 Coastal Minesweepers
- 20 Patrol Boats
- 5 Survey Ships
- 12 Fleet Support Ships and Service Craft

New Construction Programme

Construction of four submarines.
Extended refit of aircraft carrier *Melbourne*.
Modernisation of destroyers *Vampire* and *Vendetta*.
Construction of 20 patrol boats, and a submarine rescue vessel.

Mercantile Marine

Lloyd's Register of Shipping
295 vessels of 744,356 tons gross

Navy Estimates

£A	£A
1954-55: 48,165,000	1960-61: 44,716,000
1955-56: 48,834,000	1961-62: 48,019,000
1956-57: 39,065,000	1962-63: 48,890,000
1957-58: 43,791,000	1963-64: 54,509,000
1958-59: 42,401,000	1964-65: 69,212,000
1959-60: 42,612,000	1965-66: 95,467,000
	1966-67: \$A193,673,000

Personnel

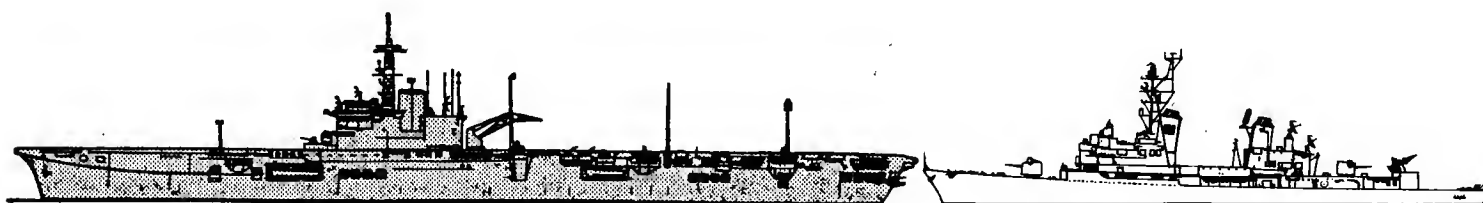
1 January 1960: 10,594 officers and sailors.
1 January 1961: 10,547 officers and sailors.
1 January 1962: 10,832 officers and sailors.
1 January 1963: 11,228 officers and sailors.
1 January 1964: 11,908 officers and sailors.
1 January 1965: 12,822 officers and sailors.
1 January 1966: 13,960 officers and sailors.
1 January 1967: 15,247 officers and sailors.

Ensign

On 1 Mar 1967 the British White Ensign was replaced by the Australian White Ensign. This retains the Union Jack in the top left canton but replaces the red cross of St. George with the five stars of the Southern Cross and the Federal Star, all blue, on a white background.

Silhouettes

Scale 150 feet = 1 inch



MELBOURNE

BRISBANE, HOBART, PERTH



DERWENT

STUART

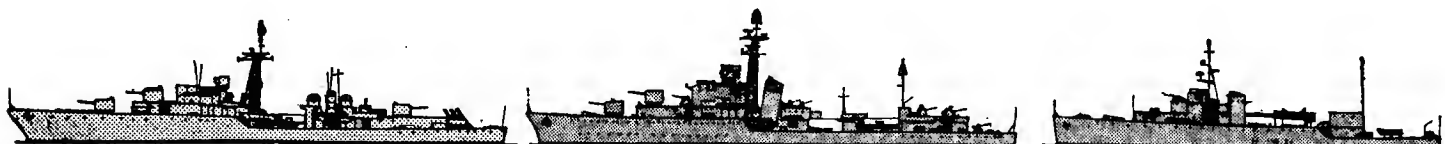
PARRAMATTA, YARRA



VAMPIRE

ANZAC

QUIBERON



VENDETTA

TOBRUK

BARCOO



DUCHESS

ARUNTA

MORESBY

AIRCRAFT CARRIER

Name	No.	Deck Letter	Builders	Laid down	Launched	Completed
MELBOURNE (ex-Majestic)	R 21	M (ex-Y)	Vickers-Armstrongs, Barrow-in-Furness	15 Apr 1943	28 Feb 1945	8 Nov 1955

1 Modified "Majestic" Class

Displacement, tons	16 000 standard; 20 000 full load
Length, feet (metres)	650 (198·1) wl; 701·5 (213·8) oa
Beam, feet (metres)	80·2 (24·5) hull
Draught, feet (metres)	25 (7·6)
Width, feet (metres)	80 (24·4) flight deck
	126 (38·4) oa including 6° angled deck and mirrors
Hangar, feet (metres)	444×52×17·5 (135·3×15·8×5·3)
Aircraft	4 Sea Venom jet fighters; 6 Gannet turboprop A/S aircraft; 10 Westland Wessex A/S helicopters (see Aircraft notes)
Guns, AA	25—40 mm 8ofors
Boilers	4 Admiralty 3-drum type
Main engines	Parsons single reduction geared turbines; 40 000 shp; 2 shafts
Speed, knots	24, sea speed 23 max
Complement	1 209 to 1 250—109 officers (120 to 130 with squadrons) and 1 100 to 1 120 ratings

At the end of the Second World War, when she was still incomplete, work on this ship was virtually brought to a standstill pending a decision as to future naval requirements. When full-scale work was resumed during 1949-55, and after her design had several times been re-cast, she underwent reconstruction and modernisation in Great Britain, including the fitting of the angled deck, the steam catapult and the mirror deck landing sights, and was transferred to RAN on completion. She was commissioned and renamed at Barrow-in-Furness on 28 Oct 1955, sailed from Portsmouth on 5 Mar 1956 and arrived at Fremantle, Australia, on 23 April 1956. She became flagship of the Royal Australian Navy at Sydney on 14 May 1956. She cost £A8 309 000.

MODERNISATION. *Melbourne* is to undergo extended refit at a cost of \$A5 000 000 to enable her to operate with S2E Tracker and A4E Skyhawk aircraft and to improve habitability.

ENGINEERING. Boilers work at a pressure of 430 lb per sq in and a temperature of 700 degrees Fahrenheit of superheat.

AIRCRAFT. The aircraft complement formerly comprised 8 Sea Venom jet fighters, 17 Gannet turbo-prop anti-submarine aircraft, and 2 Sycamore helicopters. Fourteen S2E Tracker anti-submarine aircraft and ten A4E Skyhawk fighter/bombers were purchased in 1966 in the USA (in service 1967) at a cost of \$A46 000 000.

RADAR. The ship was fitted in 1963 with a Dutch type radar aerial on the foremast similar to that in the Type 12 frigates.

PHOTOGRAPHS. A port bow oblique aerial view of *Melbourne* appears in the 1957-58 to 1964-65 editions, a large port quarter aerial oblique view in the 1962-63 and 1963-64 editions, a port quarter surface view in the 1961-62 edition, a dead overhead aerial view showing angled deck in the 1956-57 to 1961-62 editions, and a large port bow surface view in the 1955-56 to 1960-61 editions.

DRAWING. Starboard elevation and plan as converted with the angled deck. Scale: 128 feet = 1 inch.

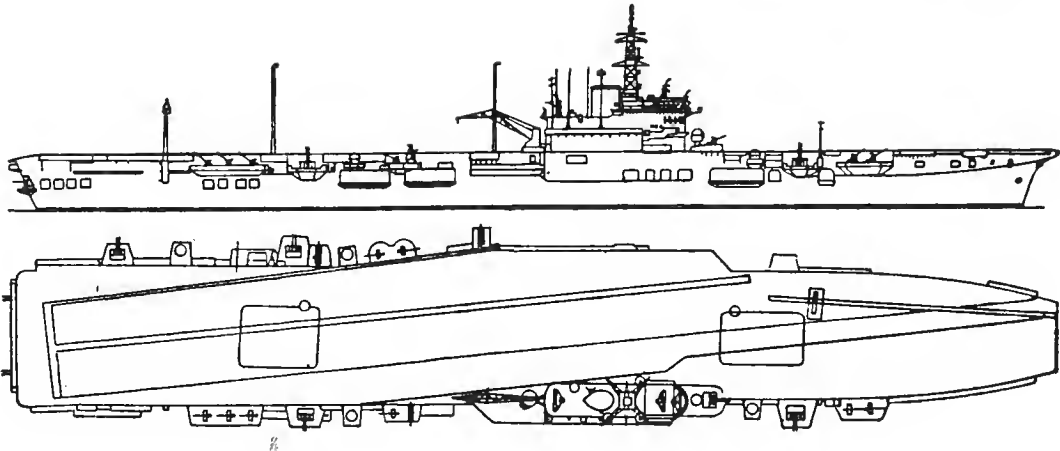


MELBOURNE

1965, Royal Australian Navy, Official



1964, Royal Australian Navy, Official



TRAINING AIRCRAFT CARRIER (Fast Military Transport)

Name	No.	Deck Letter	Builders	Laid down	Launched	Completed
SYDNEY (ex-Terrible)	A 214 (ex-R 17)	S (ex-K)	H.M. Dockyard, Devonport	19 Apr 1943	30 Sep 1944	5 Feb 1949

1 "Majestic" Class

Displacement, tons	14 380 standard ; 19 550 full load
Length, feet (metres)	630 (192.0) pp 698 (212.8) oa
Beam, feet (metres)	80 (24.4)
Draught, feet (metres)	25 (7.6)
Flight deck,	
Length, feet (metres)	690.7 (210.5)
Width, feet (metres)	112.5 (34.3)
Guns, AA	4—40 mm, single mountings
Boilers	4 Admiralty 3-drum ; 400 psi ; 700°F
Main engines	Parsons single reduction geared turbines, 40 000 shp ; 2 shafts
Speed, knots	24.8
Complement	544 (34 officers, 510 ratings) nucleus as transport. Naval Reserve will provide balance of ship's company in emergency.

This ship was handed over to the Royal Australian Navy on 16 Dec 1948, accepted for service on 5 Feb 1949, sailed from Devonport on 12 April and arrived in Australia in May 1949.

ORIGINAL SCHEME. As an operational aircraft carrier she displaced 15 740 tons standard, carried Seafury fighters and Firefly anti-submarine and reconnaissance squadrons, with a stowage capacity of 37 machines, mounted 30 Bofors 40 mm AA guns, and her complement was 1 100 officers and ratings (peace), 1 300 (war).



SYDNEY

1964, Royal Australian Navy, Official

PHOTOGRAPHS. A starboard bpw oblique aerial view of Sydney as an aircraft carrier appears in the 1954-55 to 1961-62 editions, a port quarter surface view in the 1957-58 edition, a starboard broadside view in the 1957-58 to 1962-63 editions, and a starboard quarter oblique aerial view in the 1958-59 to 1963-64 editions. A starboard bow surface view of Sydney as a troop transport appears in the 1963-64 to 1965-66 editions.

TRAINING AND CONVERSION. It was officially announced on 4 Apr 1957 that she would have a flying training role, but the ship was converted to a fast military transport in 1962, and was recommissioned in 1963. She also serves as a training ship.

DRAWINGS. A plan and port elevation drawing of Sydney, as an operational aircraft carrier, drawn to a scale of 128 feet = 1 inch, appears in the 1949-50 to 1963 64 editions, and a silhouette drawing in the 1949-50 to 1965-66 editions.



SYDNEY

1966, Royal Australian Navy, Official

SUBMARINES

4 British "Oberon" Class

Name	Builders	Laid down	Launched	Completion
ONSLOW	Scotts' Shipbuilding & Eng Co Ltd, Greenock	29 May 1967		Aug 1969
OTWAT	Scotts' Shipbuilding & Eng Co Ltd, Greenock	29 June 1965	29 Nov 1966	Dec 1967
OVENS	Scotts' Shipbuilding & Eng Co Ltd, Greenock	17 June 1966		Oct 1968
OXLEY	Scotts' Shipbuilding & Eng Co Ltd, Greenock	2 July 1964	24 Sep 1965	21 Mar 1967

Displacement, tons	1 610 standard ; 2 030 surface ; 2 410 submerged
Length, feet (metres)	241 (73.5) pp ; 295.5 (90.1) oa
Beam, feet (metres)	26.5 (8.1)
Draught, feet (metres)	18 (5.5)
Torpedo tubes	8—21 in (533 mm) for homing torpedoes
Main engines	Admiralty Standard Range diesels, Electric drive
Complement	68 (6 officers, 62 ratings)

It was officially announced by the Minister for the Navy in Canberra, Australia, on 22 Jan 1963 that four submarines of the "Oberon" class were to be built in British shipyards under Admiralty supervision at an overall cost of £A5 000 000 each, with deliveries spread over 3 years.

Submarines of the Fourth Submarine Squadron of the Royal Navy are based at Sydney, Australia, for anti-submarine training.



OXLEY

1967, Royal Australian Navy, Official

GUIDED MISSILE ARMED DESTROYERS

3 U.S. "Charles F. Adams" Class

Displacement, tons	3 370 standard; 4 500 full load
Length, feet (metres)	431 (131.4) wl; 437 (132.2) oa
Beam, feet (metres)	47 (14.3)
Draught, feet (metres)	20 (6.1)
Missiles, AA	"Tartar", single launcher
Missiles, A/S	Long range "Ikara" system with two single launchers
Guns, dual purpose	2-5 in (127 mm) 54 cal., single-mount, rapid fire
Torpedo tubes	6 (2 triple banks) for A/S torpedoes
Boilers	4 Foster Wheeler "D" type; 1 200 psi; 950°F
Main engines	2 GE double reduction turbines 70 000 shp; 2 shafts
Speed, knots	35
Complement	333 (21 officers, 312 men)

CONTRACTS
On 6 Jan 1962, in Washington, United States defence representatives and Australian military officials (on behalf of the Royal Australian Navy) and executives of the Defoe Shipbuilding Company, of Bay City, Michigan, signed a £A12 863 350 (\$A25 726 700 in the new Australian decimal currency introduced in 1966) contract for the construction of two guided-missile destroyers (shipbuilding cost only).

On 22 Jan 1963 it was officially announced by the Minister for the Navy in Canberra, Australia, that a third guided-missile destroyer was to be built in the United States for the Royal Australian Navy.

They are the first of their kind for the Australian Navy.

DEFENCE
In addition to the "Tartar" missiles, with a range of 15 to 20 miles, they are equipped with the very latest long range anti-submarine warfare weapons.

RÔLE
These versatile ships are intended to work with hunter killer groups in attacking submarines and to protect vital ocean convoys.

DESIGN
Generally similar to the United States "Charles F. Adams" class, but they differ by the addition of a broad deckhouse between the funnels enclosing the "Ikara" anti-submarine torpedo-carrying missile system, and the mounting of a single-arm launcher, instead of a twin, for the "Tartar" surface-to-air guided missiles. As compared with previous destroyers, the ships have greater length overall, more beam and heavier displacement. They have a new hull design with aluminium superstructures. The most recent habitability improvements have been incorporated into their construction, including air conditioning of all living spaces.

COMMISSIONING
The first ship of the class, *Perth*, was commissioned and formally handed over to the Royal Australian Navy at Boston Naval Shipyard, Massachusetts, on 17 July 1965 and she steamed into an Australian port, Brisbane, for the first time on 4 March 1966. *Hobart* commissioned at Boston Naval Shipyard on 16 Dec 1965.

COST. Original estimate about £A6 400 000 to £A7 000 000 each (with missiles and electronics £A20 000 000 each). New decimal currency: about \$A12 800 000 to \$A14 000 000 each (with missiles and electronics \$A40 000 000 each). The total cost of *Perth* is reported to be almost \$A50 000 000.

PHOTOGRAPHS. A port broadside surface view of *Perth* at sea on speed trials appears in the Addenda of the 1965-66 edition.

APPEARANCE. For comparative appearance of these ships see "Charles F. Adams" class in the United States section and "County" class in the United Kingdom section.

Name	No.	Builders	Laid down	Launched	Completed
BRISBANE	D 41	Defoe Shipbuilding Co, Bay City, Mich.	15 Feb 1965	5 May 1966	30 Nov 1967
HOBART	D 39	Defoe Shipbuilding Co, Bay City, Mich.	26 Oct 1962	9 Jan 1964	18 Dec 1965
PERTH	D 38	Defoe Shipbuilding Co, Bay City, Mich.	21 Sep 1962	26 Sep 1963	22 May 1965



HOBART 1966, Royal Australian Navy, Official



HOBART 1967, Royal Australian Navy, Official



PERTH 1966, Royal Australian Navy, Official

DESTROYERS

3 "Daring" Class

Displacement, tons	2 800 standard ; 3 600 full load
Length, feet (metres)	366 (111·3)pp; 388·5 (118·4) oa
Beam, feet (metres)	43 (13·1)
Draught, feet (metres)	12·8 (3·9)
Guns, surface	6—4·5 in (115 mm) in twin turrets, two forward and one aft
Guns, AA	6—40 mm
A/S	1 3-barrelled DC mortar (see <i>Design notes</i>)
Torpedo tubes	5—21 in (533 mm) in quintuple mounting
Boilers	2 Foster Wheeler; 650 psi ; 850°F
Main engines	English Electric geared turbines 54 000 shp; 2 shafts
Speed, knots	30·5
Radius, miles	3 700 at 20 knots
Oil fuel (tons)	584
Complement	327

The above particulars refer to *Vampire* and *Vendetta*. For slightly different data applying to *Duchess*, which has Squid instead of Limbo, see under "Daring" class in United Kingdom section.

All-purpose ships, equipped for surface engagements anti-aircraft defence, and anti-submarine warfare. *Vampire* and *Vendetta* are the largest destroyers ever built in Australia. They were ordered in 1946. The ships are powerfully equipped for both offensive and defensive purposes. Their sister ship, *Voyager*, the prototype of the class, collided with the aircraft carrier *Melbourne* and sank off the southern coast of New South Wales on the night of 10 Feb 1964. She was replaced by the British destroyer *Duchess*, lent to Australia by the United Kingdom for four years.

MODERNISATION. *Vampire* and *Vendetta* are to be modernised at a cost of \$A26 000 000, including the installation of Ikara anti-submarine weapons.

DESIGN. *Vampire* and *Vendetta* are of similar design, including all welded construction, to that of "Daring" class, built in Great Britain, but were modified to suit Australian conditions and have "Limbo" instead of "Squid" anti-submarine mortars.

GUNNERY. The anti-aircraft guns are laid and fired by radar.

CONSTRUCTION. The superstructure is of light alloy, instead of steel, to reduce weight.

Name	No.	Builders	Begun	Launched	Completed
VAMPIRE	D 11	Cockatoo Island Dockyard, Sydney	1 July 1952	27 Oct 1956	23 June 1959
VENDETTA	D 08	HMA Naval Dockyard, Williamstown	4 July 1949	3 May 1954	26 Nov 1958
DUCHESS	D 154	John I. Thornycroft & Co, Southampton	2 July 1948	9 Apr 1951	23 Oct 1952

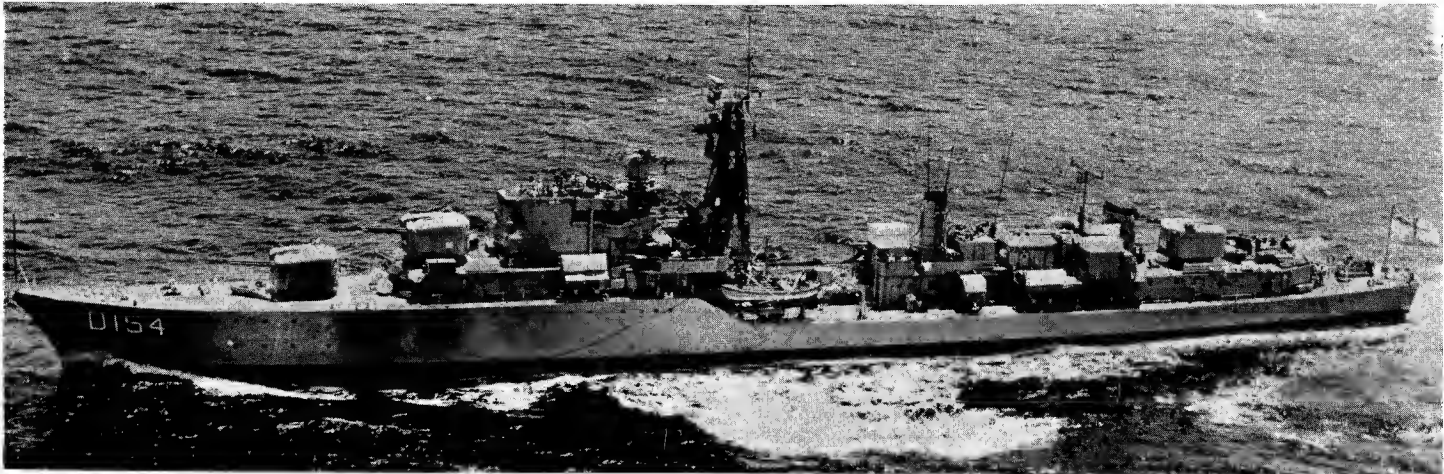


VENDETTA

1965, Royal Australian Navy, Official

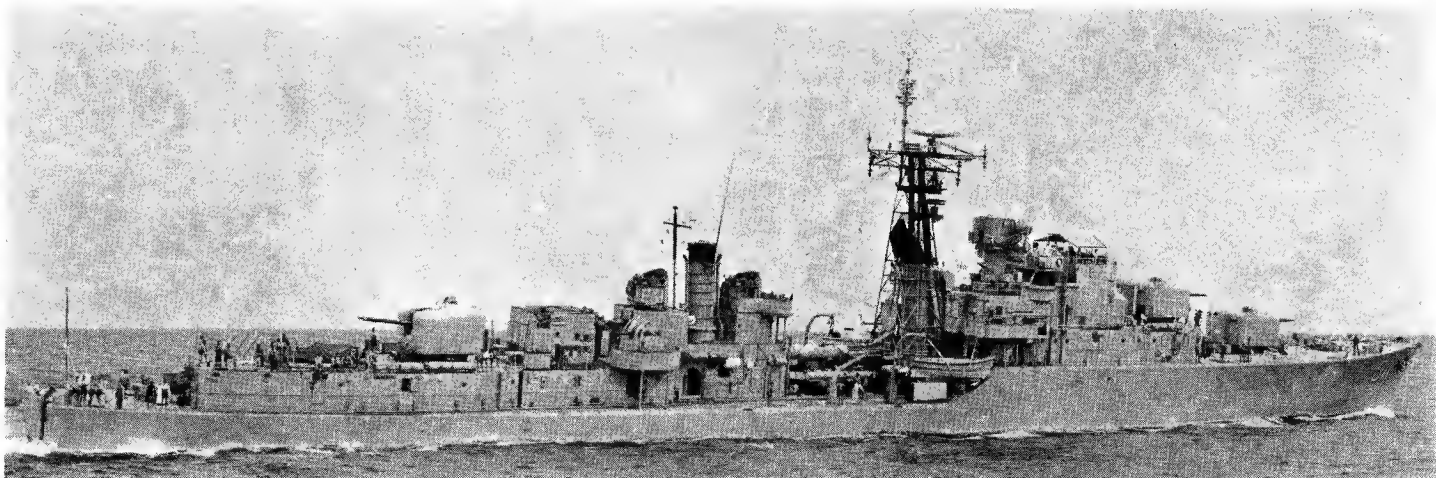
PHOTOGRAPHS. A port bow view of *Vendetta* appears in the 1960-61 and 1961-62 editions, a port bow view of *Vampire* in the 1959-60 to 1963-64 editions, a port quarter oblique surface view of *Vendetta* in the 1962-63 to 1964-65 editions, a starboard bow oblique aerial view of *Duchess* in the 1964-65 edition, and a starboard broadside surface view of *Vampire* in the 1964-65 to 1966-67 editions.

CLASS. Four large destroyers of this type were originally projected, to have been named after the Royal Australian Navy's famous "Scrap Iron Flotilla" of destroyers which won renown in the Mediterranean on the Tobruk ferry run and in other areas during the Second World War, but *Waterhen* was cancelled in 1954, and *Voyager* was lost in 1964.



DUCHESS

1965, Royal Australian Navy, Official



VAMPIRE

1967, Royal Australian Navy, Official

Destroyers—continued

2 "Battle" Class

Displacement, tons	2 400 standard; 3 450 full load
Length, feet (metres)	355 (108.2) pp 379 (115.5) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	13.5 (4.1) mean
Guns, surface	Tobruk: 4—4.5 in (115 mm) in 2 twin turrets Anzac: 2—4.5 in (1 twin turret) 6—40 mm
Guns, AA	Squid 3-barrelled DC mortar
A/S	10—21 in (533 mm) in Tobruk only
Torpedo tubes	2 Admiralty 3-drum 400 psi 650°F
Boilers	Parsons geared turbines
Main engines	50 000 shp; 2 shafts
Speed, knots	31
Complement	290

Name	No.	Builders
ANZAC	D 59	Williamstown Naval Dockyard
TOBRUK	D 37	Cockatoo Docks & Eng Co Pty Ltd

Laid down	Launched	Completed
23 Sep 1946	20 Aug 1948	22 Mar 1951
5 Aug 1946	20 Dec 1947	17 May 1950

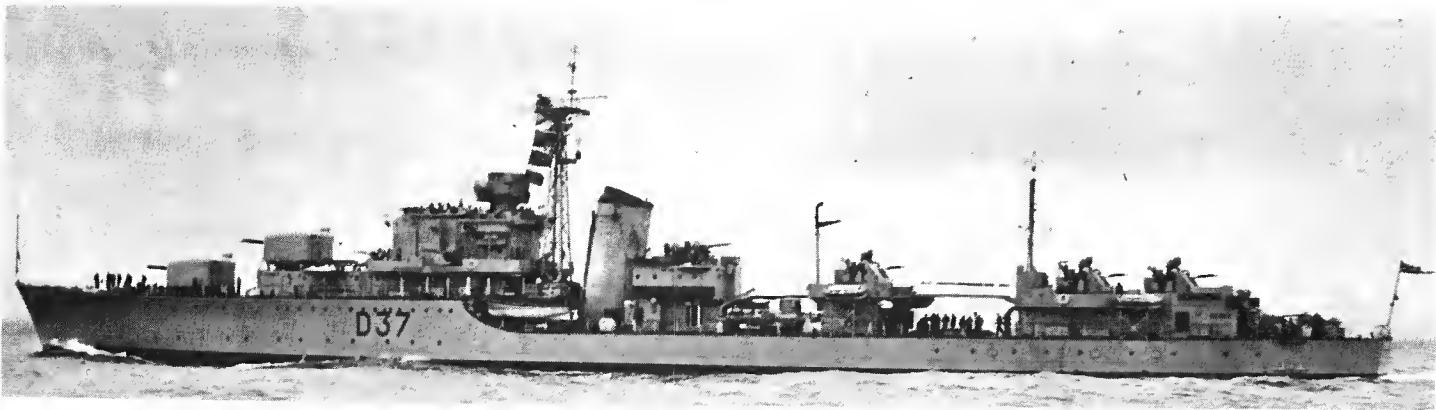
Ordered in 1945-46. Similar to the "Battle" class destroyers in the Royal Navy, but several alterations were incorporated, including sleeping accommodation for officers and men fore and aft, improved mess layout and other amenities, modern radar fire control, close range Staag armament (new type of twin 40 mm Bofors gun mounting) and the latest anti-submarine weapons. Tobruk was placed in Reserve in 1960. Anzac became fleet training ship, with extra deckhouse aft and director removed.

GUNNERY. Anzac had the first "Daring" type of 4.5 inch guns and mountings of completely Australian manufacture (weight of each twin mount is approx 50 tons). They are fully automatic, with a rate of fire of 25 rounds per minute, and an accurate range of over ten miles, firing a shell weighing 53 lb. The 4.5 inch guns for Tobruk were imported from Great Britain. In 1966 "B" turret in Anzac was suppressed and replaced by a chartroom for training purposes.



ANZAC ("B" turret replaced by chartroom)

1966, Royal Australian Navy, Official



TOBRUK

Royal Australian Navy, Official

1 "Tribal" Class

Displacement, tons	2 012 standard; 2 700 full load
Length, feet (metres)	355.5 (108.4) pp; 377 (114.9) oa
Beam, feet (metres)	36.5 (11.1)
Draught, feet (metres)	13.5 (4.1) mean
Guns, surface	4—4.7 in (120 mm), 2—4 in (102 mm)
Guns, AA	8—40 mm
A/S	Squid 3-barrelled DC mortar
Torpedo tubes	4—21 in (533 mm)
Boilers	3 Admiralty 3-drum; 300 psi 650°F
Main engines	Parsons geared turbines
	44 000 shp; 2 shafts
Speed, knots	32
Complement	293

Name	No.	Builders
ARUNTA	D 130	Cockatoo Docks & Eng Co Pty Ltd

Laid down	Launched	Completed
15 Nov 1939	30 Nov 1940	3 Mar 1942



ARUNTA

Royal Australian Navy, Official

On modernisation, her deckhouse was extended aft, she was re-armed with different pattern guns and A/S weapons and reclassified as an anti-submarine destroyer. Of this class, of originally three ships, Baatan was declared for disposal in 1957 (since scrapped), and Warramunga was declared for disposal in 1962.

ANTI-SUBMARINE FRIGATES

6 Modified Type 12

Displacement, tons	2 100 standard; 2 700 full load
Length, feet (metres)	360 (109.7) pp; 370 (112.8) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	12.8 (3.9) mean
Missiles, AA	1 quadruple launcher for "Seacat"
A/S weapons	1 launcher for "Ikara" long range system;
	1 "Limbo" 3-barrelled DC mortar
Guns, dual purpose	2-4.5 in (115 mm)
Boilers,	2 Babcock & Wilcox; 550 psi; 850°F
Main engines	2 double reduction geared turbines
	30 000 shp; 2 shafts
Speed, knots	30
Complement	250

The design is generally similar to that of British Type 12 anti-submarine frigates, but modified by the Royal Australian Navy to incorporate improvements in equipment and habitability. The enclosed tower foremast differs from that in "Rothesay" class frigates in the Royal Navy. All six ships are being standardised to uniform armament and layout. *Stuart* was the first fitted with the Ikara anti-submarine guided missile, trial ship for the system. *Derwent* was the first RAN ship to be fitted with "Seacat". Both ships are fitted with variable depth sonar.

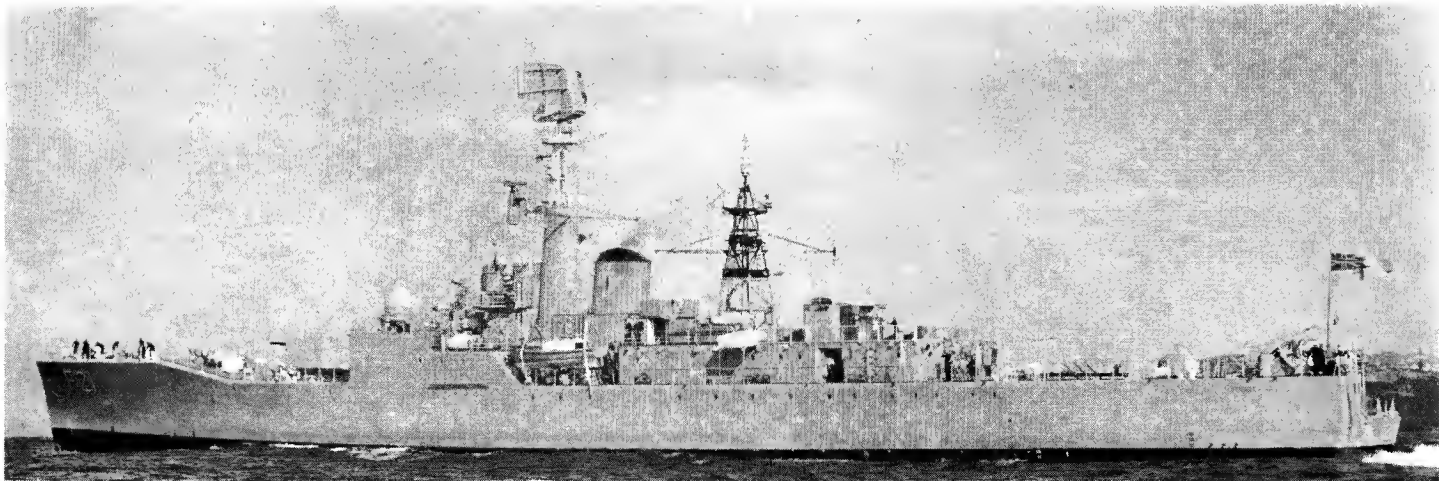
Swan and *Torrens*, laid down in Feb. and May 1965 respectively, and scheduled for completion in 1969, were originally officially classed as Modified Type 12 Destroyer Escorts. *Derwent* and *Stuart* carried DE numbers for about three months but reverted to F.

Name	No.	Builders	Launched	Completed
DERWENT	F 22	Williamstown Naval Dockyard, Melbourne	17 Apr 1961	Apr 1964
PARRAMATTA	F 05	Cockatoo Island Dockyard, Sydney	31 Jan 1959	July 1961
STUART	F 21	Cockatoo Island Dockyard, Sydney	8 Apr 1961	June 1963
YARRA	F 07	Williamstown Naval Dockyard, Melbourne	30 Sep 1958	July 1961
SWAN	F 64	Williamstown Naval Dockyard, Melbourne		
TORRENS	F 74	Cockatoo Island Dockyard, Sydney		



STUART 1967, Royal Australian Navy, Official

PHOTOGRAPHS. Photographs of *Parramatta* appear in the 1961-62 to 1963-64 and 1966-67 editions, of *Yarra* in the 1962-63 edition, and of *Derwent* in the 1964-65 and 1965-66 editions.



STUART 1966, courtesy Mr. John C. Jeremy

FAST ANTI-SUBMARINE FRIGATES (Converted Destroyers)

3 "Queenborough" Class

Displacement, tons	2 020 standard; 2 700 full load
Length, feet (metres)	358.2 (109.2)
Beam, feet (metres)	35.7 (10.9)
Draught, feet (metres)	13.2 (4.0) mean
Guns, surface	2-4 in (102 mm) twin-mount
Guns, AA	2-40 mm
A/S	2 Limbo 3-barrelled DC mortars
Boilers	2 Admiralty 3-drum; 300 psi; 650°F
Main engines	Parsons geared turbines
	40 000 shp; 2 shafts
Speed, knots	31.25
Complement	220 (war)

Formerly in the Royal Navy. Lent to the Royal Australian Navy in 1943 (*Quiberon*, *Quickmatch*) and 1945 (*Quadrant*, *Quality*, *Queenborough*). Transferred permanently in June 1950 when it was announced they would be converted to fast anti-submarine frigates similar to the British Type 15, the conversions being effected at Cockatoo Island and Williamstown dockyard, but only four of the ships were reconstructed (see *Disposals*). *Queenborough* completed conversion on 7 Dec 1954, *Quickmatch* on 23 Sep 1955, and *Quiberon* on 18 Dec 1957. *Queenborough* recommissioned on 28 July 1966.

Name	No.	Builders	Laid down	Launched	Completed
QUEENBOROUGH	F 02	Swan, Hunter & W. R. Ltd, Wallsend	6 Nov 40	16 Jan 42	10 Dec 42
QUIBERON	F 03	J. Samuel White & Co, Ltd, Cowes	14 Oct 40	31 Jan 42	22 July 42
QUICKMATCH	F 04	J. Samuel White & Co, Ltd, Cowes	6 Feb 41	11 Apr 42	30 Sep 42



QUIBERON 1965, courtesy Mr. John C. Jeremy

PHOTOGRAPHS. A photograph of *Quickmatch* appears in the 1957-58 to 1961-62 editions, and of *Queenborough* in the 1960-61 to 1964-65 editions. DISPOSALS Of this class, *Quality*, not converted, was declared for disposal in 1957, and *Quadrant* early in 1962.

DEPOT SHIP (ex-Frigate)

1 Australian "Bay" Type

Displacement, tons	1 537 standard; 2 187 full load
Length, feet (metres)	283 (86.3) pp; 301 (91.7) oa
Beam, feet (metres)	36.5 (11.1)
Draught, feet (metres)	12.8 (3.9) mean
Boilers	2 Admiralty 3-drum type
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	19

Currently being used as a minesweeper depot ship. Armament comprised four 4 inch and five 40 mm guns, one Hedgehog and 4 DCT, and complement was 177.

DISPOSALS
Of the three other frigates of the class *Condamine* was declared for disposal in 1960, and *Murchison* and *Shoalhaven* in 1962.

SURVEY SHIPS (ex-Frigates)

3 Australian "River" Class

Displacement, tons	1 489 standard, (<i>Barcoo</i> 1 477) 2 200 full load
Length, feet (metres)	283 (86.3) pp; 301.3 (91.8) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	12.9 (3.9)
Guns, AA	1—40 mm
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	20
Complement	183

Frigates converted in 1959-60 for survey and oceanographic research. The conversion included the provision of special laboratories and the fitting of *Gascoyne* with a helicopter platform. *Lachlan* was sold to the Royal New Zealand Navy.

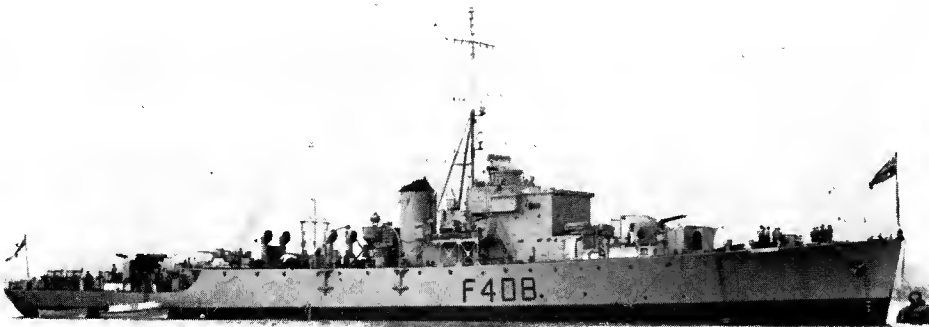
GUNNERY. The two 4-inch guns and two Squid A/S mortars in "B" position were removed. Forward 4-inch gun was in "A" position with 40 mm gun superimposed.

DISPOSALS
Of the four other frigates of this class, *Burdekin* and *Hawkesbury* were declared for disposal in 1960, and *Barwon* and *Macquarie* in 1962.

DISPOSALS OF "SWAN" CLASS FRIGATES
Swan, latterly cadet training ship, was paid off in Nov 1962 and put up for sale in Apr 1964. *Warrego*, latterly survey ship, was paid off into reserve in Aug 1963 and put up for sale in Apr 1965.

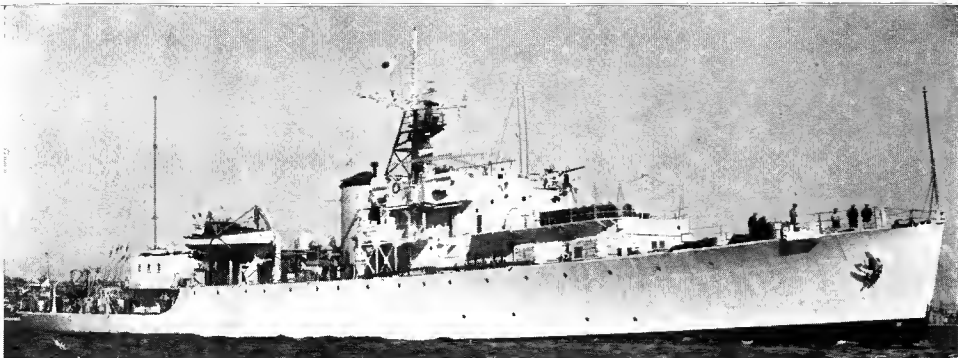
OCEAN MINESWEEPERS. The last four ocean minesweepers of the "Bathurst" class were *Castlemaine*, immobile training ship at Flinders Naval Depot, *Colac*, now a tank cleaning vessel, *Mildura* and *Wagga*. These were survivors of a group of 32, four of which were given to New Zealand. For names and disposals of the remaining ships see 1961-62 edition.

Name	No.	Builders	Laid down	Launched	Completed
CULGOA (ex- <i>Macquarie</i>)	A 256 (ex-F 408)	Williamstown Naval Dockyard	15 July 43	22 Sep 45	17 Dec 46



CULGOA (before alteration to minesweeper depot ship) 1963, Royal Australian Navy, Official

Name	No.	Builders	Laid down	Launched	Completed
BARCOO	A 245 (ex-F 175)	Cockatoo Docks and Engineering Co	21 Oct 42	26 Aug 43	17 Jan 44
DIAMANTINA	A 266 (ex-F 377)	Walkers Ltd, Maryborough, Queensland	12 Apr 43	6 Apr 44	27 Apr 45
GASCOYNE	A 276 (ex-F 354)	Morts' Dock and Engineering Co	4 June 42	20 Feb 43	20 Dec 43



BARCOO 1963, Royal Australian Navy, Official



GASCOYNE (converted for survey, with helicopter platform) 1960, Royal Australian Navy, Official

COASTAL MINESWEEPERS AND MINEHUNTERS

CURLEW (ex-HMS <i>Chediston</i> , ex- <i>Montrose</i>)	IBIS (ex-HMS <i>Singleton</i>)
GULL (ex-HMS <i>Swanston</i>)	SNIPER (ex-HMS <i>Alcaston</i>)
HAWK (ex-HMS <i>Somerleyton</i> , ex- <i>Gamston</i>)	TEAL (ex-HMS <i>Jackton</i>)

Displacement, tons	360 standard; 425 full load
Dimensions, feet	140 pp; 152 oa x 28.8 x 8.2
Guns	2—40 mm AA
Main Engines	Napier Deltic diesels; 2 shafts; 3 000 bhp = 15 knots
Complement	3 officers; 25 ratings

"Ton" class coastal minesweepers. Purchased from the United Kingdom in 1961, and modified in British Dockyards to suit Australian conditions. Turned over to the Royal Australian Navy, commissioned and re-named in Britain during summer 1962. Mirlees deisels were replaced by Napier Deltic, and ships air conditioned and fitted with stabilisers. Sailed from Portsmouth to Australia on 1 Oct 1962. Constitute the 16th Mine Countermeasures Squadron. *Curlew* and *Snipe* are being converted into minehunters.



HAWK 1963, Royal Australian Navy, Official

ESCORT MAINTENANCE SHIP

STALWART

Displacement, tons	15 000
Dimensions, feet	515.5 x 67.5 x 29.5
Aircraft	1 helicopter
Main Engines	2 Scott-Sulzer 6-cylinder turbo-diesel engines; 2 shafts; 14 400 bhp = 18 knots
Complement	478 officers and ratings

Largest naval vessel built in Australia. Ordered from Cockatoo Docks & Eng Co Pty Ltd, Sydney on 11 Sep 1963. Laid down in June 1964 and launched on 7 Oct 1966 for completion in 1967. Designed to maintain destroyers and frigates and advanced weapons systems, including guided missiles. She has a helicopter flight deck and is defensively armed. High standard of habitability. An official artist's impression of the ship's completed appearance appears in the 1964-65 to 1966-67 editions.

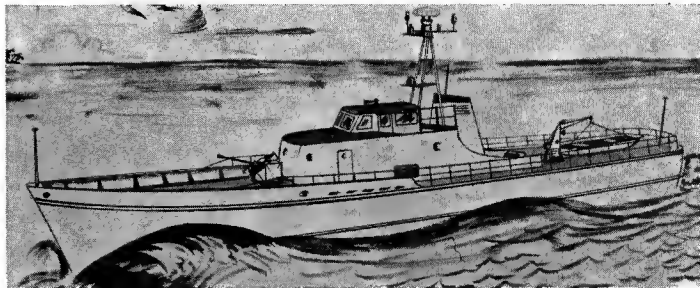


STALWART (after launch) 1967, Royal Australian Navy, Official

PATROL CRAFT
20 New Construction

New Guinea AITAPE	LADAVA	LAE	MANDANG	SAMARAI
Australia ACUTE	ARCHER	ASSAIL	BANDOLIER	BAYONET
ADROIT	ARDENT	ATTACK	BARBETTE	BOMBARD
ADVANCE	ARROW	AWARE	BARRICADE	BUCCANEER
Displacement, tons	133			
Dimensions, feet	107.5 oa x 20 x 5			
Guns	1—40 mm; 2 medium MG			
Main Engines	Paxman diesels; speed = 27 knots			
Complement	19 (3 officers, 16 ratings)			

Five patrol boats for the formation of the New Guinea coastal security force and fifteen for general duties are to be built. Steel construction. Builders: Evans Deakin & Co. Pty. Ltd., Brisbane, and Walkers Ltd., Maryborough. Ordered in Nov 1965. First vessel was originally scheduled for delivery in Aug 1966, but was not launched until Mar 1967.

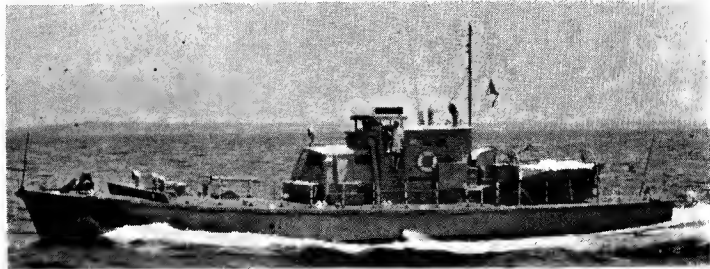


ACUTE 1967 Royal Australian Navy, Official

SEAWARD DEFENCE BOATS
3 HDML Type

SDB 1321	SDB 1324	SDB 1325
Displacement, tons	59 standard; 64 full load	
Dimensions, feet	80.2 oa x 16.1 x 5.5	
Guns	1—40 mm AA	
Main engines	2 Buda diesels; 2 shafts; 390 bhp max = 11 knots	
Complement	12	

Originally known as Harbour Defence Motor Launches (HDML) and afterwards as Seaward Defence Motor Launches (SDML). 1321 was modified with a two berth C.O.'s cabin added and covered bridge in place of an open bridge. SDML 1322 was stricken off in 1953. Remaining four were redesignated Seaward Defence Boats (SDB) in 1957. SDB 1327 was stricken from the list in 1960. Used for training.



SDB 1321 Royal Australian Navy Official

BOOM DEFENCE VESSELS

KIMBLA	
Displacement, tons	750 standard; 1 002 full load
Dimensions, feet	150 pp; 179 oa x 32 x 12 mean
Guns	1—40 mm AA; 2—20 mm AA
Main engines	Triple expansion; Oil fuel; 10 knots
Complement	32

Built as a boom defence vessel by Walkers Ltd., Maryborough. Laid down on 4 Nov 1953. Launched 23 Mar 1955. Completed on 27 Mar 1956. Converted to a Trials Vessel in 1959. A photograph of Kimbla appears in the 1957-58 to 1965-66 editions.

1 "Kangaroo" Class

KOALA	
Displacement, tons	768 standard; 971 full load
Dimensions, feet	150 pp; 178.2 oa x 32.2 x 11.8 mean
Guns	1—40 mm AA
Main engines	Triple expansion; 914 ihp = 11 knots
Boilers	2
Oil fuel (tons)	151
Complement	31

Similar to the "Bar" type boom defence vessels in the Royal Navy. Laid down on 21 June 1939. Launched on 4 Nov 1940. Completed on 7 Feb 1940. A photograph of Koala appears in the 1966-67 edition. Of the "Kangaroo" class, Karangi was deleted from the list in 1965, and Kangaroo was put up for sale in July 1966. Kookaburra, of the "Net" type was stricken in 1965.

INSHORE MINESWEEPERS
2 "Ham" Class

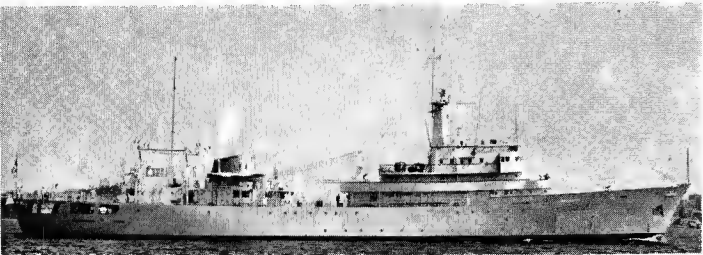
POPHAM	WINTRINGHAM
Displacement, tons	120 standard; 159 full load
Dimensions, feet	100 pp; 107.5 oa x 22 x 5.8
Guns, AA	1—20 mm
Main engines	2 Paxman diesels; 1 100 bhp = 14 knots

Purchased from the United Kingdom on 9 June 1966. Of wooden construction.

SURVEY SHIPS

MORESBY	
Displacement, tons	2 000 standard 2 500 full load
Dimensions, feet	284.5 pp; 314 oa x 42 x 15
Guns	2—40 mm 8ofors AA (single mountings)
Aircraft	1 Westland Scout helicopter
Main engines	Diesel-electric; 2 shafts; 3 diesels; 3 990 bhp; 2 electric motors; 2 500 shp = 20 knots
Complement	130 officers and ratings

The Royal Australian Navy's first specially designed survey ship. Built at the State Dockyard, Newcastle, New South Wales, at a cost of £A2 000 000. Launched on 7 Sep 1963 and commissioned on 6 Mar 1964. Fitted with the most modern hydrographic equipment.



MORESBY 1967, Royal Australian Navy, Official

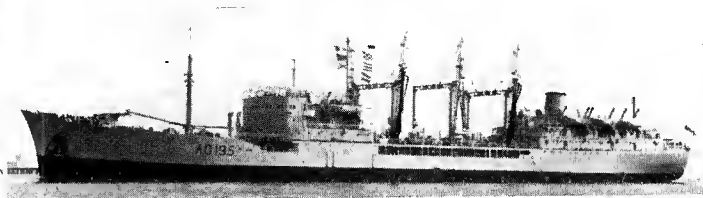
PALUMA	
Displacement, tons	340
Dimensions, feet	120 x 24 x 6.8 mean
Main engines	Diesel; Speed = 9.5 knots

A motor stores lighter of war construction converted into a small survey vessel in 1958.

FLEET REPLENISHMENT OILER

SUPPLY (ex-Tide Austral)	
Displacement, tons	15 000 standard; 26 000 full load
Measurement, tons	17 600 deadweight; 11 200 gross
Dimensions, feet	550 pp; 583 oa x 71 x 32 max
Guns	8—40 mm AA
Main engines	Double reduction geared turbines; 15 000 shp = 17 knots
Complement	13 officers, 120 ratings

Built for Australia by Harland & Wolff, Ltd., Belfast. Launched 1 Sep 1954, completed March 1955. British "Tide" Class. Lent to Great Britain until 1 Sep 1962, when Tide Austral was re-named HMAS Supply and commissioned in the Royal Australian Navy at Portsmouth. Sailed for Australia 1 Oct 1962.



SUPPLY 1963, Wright & Logan

GENERAL PURPOSE VESSELS

BANKS	BASS
Displacement, tons	234 standard; 260 full load
Dimensions, feet	90 pp; 101 oa x 22 x 8 mean
Main engines	Diesel; speed = 10 knots

"Explorer" class. Of all steel construction. Banks was fitted for fishery surveillance and Bass for surveying, but both were used for other duties. Reserve training in 1966.

FLEET TUGS

SPRIGHTLY	
Displacement, tons	869 full load
Dimensions, feet	143 x 34.5 x 12.8 mean
Guns	3—40 mm AA
Main engines	2 diesels; 2 electric motors; 4 000 bhp = 12 knots

Built at Orange Texas USA. Laid down on 6 June 1942, launched on 7 Aug 1942 and completed on 23 Nov 1942. Engines controllable from bridge.

BRONZEWING	EMU
Displacement, tons	250
Dimensions, feet	98.8 oa x 21.2 x 7.8 mean
Main engines	Diesel; 1 shaft; 480 bhp = 9.5 knots

Launched by Mort's Dock, Sydney on 2 Feb 1946 and 25 June 1946 respectively.

BELGIUM

Administration

Chief of Naval Staff:
Commodore L. J. J. Lurquin
Naval, Military and Air Attaché in London:
Lt.-Colonel R. C. Close
Naval, Military and Air Attaché in Washington:
Major General Count Alfred Cornet d'Elzies de Peissant

Strength of the Fleet

- 2 Coastal Escorts (Ocean Minesweepers)
- 7 Ocean Minesweepers (Non-Magnetic)
- 3 Command and Logistical Support Ships
- 23 Coastal Minesweepers (Non-Magnetic)
- 16 Inshore Minesweepers
- 7 River Patrol Boats
- 14 Auxiliaries and Service Craft

The Belgian Naval Force is attached to the Ministry of National Défense

Personnel

1967: 330 officers and 4 800 other ranks

Mercantile Marine

Lloyd's Register of Shipping:
224 vessels of 875,582 tons gross

COASTAL ESCORTS

Name	Pennant No.
DE MOOR (ex-HMS Rosario)	F 905
G. LECOINTE (ex-HMCS Wallaceburg)	F 901

Builders	Laid down	Launched	Completed	Transferred
Harland & Wolff Ltd, Belfast	22 Sep 1942	3 Apr 1943	20 Aug 1943	13 Jan 1953
Port Arthur Shipbuilding Co, Ontario	17 Mar 1942	17 Dec 1942	17 Mar 1943	31 July 1959

2 Ex-British "Algerine" Class

Displacement, tons 1 040 standard; 1 335 full load
Length, feet (metres) 221 (67.4) wl; 225 (68.6) oa
Beam, feet (metres) 35.5 (10.8)
Draught, feet (metres) 11 (3.4)
Guns, AA 5-40 mm
A/S 4 DCT; 2 DCR
(1 Hedgehog in G. Lecointe)
Boilers 2 Admiralty 3-drum; 250 psi
Main engines De Moor—Geared turbines
G. Lecointe—Triple expansion
2 000 shp; 2 shafts
Speed, knots 15
Radius, miles 4 000 at 10 knots
Oil fuel (tons) 235
Complement 101

Formerly ocean minesweepers reclassified as coastal escorts in 1959. De Moor is tropicalised. G. Lecointe was transferred at Sydney, Nova Scotia. Sister Ships A.F. Dufour (ex-HMCS Winnipeg) and De Brouwer (ex-HMCS Spanker) were stricken in 1966.



G. LECOINTE

1967, Belgian Navy, Official

OCEAN MINESWEEPERS

Name	Pennant No.	Builders	Laid down	Launched	Completed	Transferred
A.F. DUFOUR (ex-Lagen, M 950 ex-MSO 498)	M 903	Bellingham Shipyard Inc, Wash	1954	1955	27 Sep 1955	Summer 1966
ARTEVELDE (ex-MSO 503, ex-AM 503)	M 907	Tacoma Boatbuilding Co, Tacoma, Wash	1953	19 June 1954	15 Dec 1955	15 Dec 1955
BREYDEL (ex-MSO 504, ex-AM 504)	M 906	Tacoma Boatbuilding Co, Tacoma, Wash	1954	25 Mar 1955	15 Feb 1956	15 Feb 1956
DE BROUWER (ex-Namsen, M 951, ex-MSO 499)	M 904	Bellingham Shipyard Inc, Wash	1954	1955	1 Nov 1955	Summer 1966
F. BOVESSE (ex-MSO 516, ex-AM 516)	M 909	Tampa Shipbuilding Co Inc, Tampa, Fla.	1954	1956	25 Jan 1957	25 Jan 1957
G. TRUFFAUT (ex-MSO 515, ex-AM 515)	M 908	Tampa Shipbuilding Co Inc, Tampa, Fla.	1955	1955	12 Oct 1956	12 Oct 1956
VAN HAVERBEKE (ex-MSO 522)	M 902	Petersen Builders Inc, Sturgeon Bay, Wisc.	2 Mar 1959	29 Oct 1959	7 Nov 1960	9 Dec 1960

7 U.S. MSO (Ex-AM) Type 498

Displacement, tons 720 light; 780 full load
Length, feet (metres) 165 (50.3) wl; 172.5 (52.6) oa
Beam, feet (metres) 35 (10.7)
Draught, feet (metres) 11 (3.4)
Guns, AA 1-40 mm
Main engines 2 GM diesels
1 600 bhp; 2 shafts
Speed, knots 14 max
Radius, miles 2 400 at 12 knots
Oil fuel (tons) 50
Complement 72

Wooden hulls and non-magnetic equipment. Capable of sweeping mines of any type. Diesels of non-magnetic stainless steel alloy. Controllable pitch propellers. Artevelde and Breydel were transferred at Seattle, Wash. Van Haverbeke berthed at Ostend on 2 May 1961. F. Bovesse in Sep 1957, G. Truffaut in Aug 1957, Breydel in Sep 1956, and Artevelde in June 1956. A.F. Dufour (ex-Lagen) and De Brouwer (ex-Namsen), handed over by USA to Norway on 27 Sep and 1 Nov 1955, respectively, were transferred to Belgium in 1966.



VAN HAVERBEKE

1967, Belgian Navy, Official

SUPPORT SHIPS

KAMINA (ex-Royal Harold, ex-Herman von Wissmann)
Displacement, tons 3 900 standard; 5 750 full load
Length, feet (metres) 344.5 (105.0) pp; 374 (114.0) oa
Beam, feet (metres) 48.2 (14.7)
Draught, feet (metres) 18.2 (5.5)
Guns, surface 1-3 in (76 mm)
Guns, AA 1-40 mm; 2-13 mm
Main engines 1-B & W diesel
3 600 bhp; 1 shaft
Speed, knots 15 cruising
Radius, miles 10 000 at economical speed
Complement 175, plus 250 training billets

Built in 1940 at Hoboken, Antwerp, by J. Cockerill for Poland. Seized by Germany and used as submarine support ship in Norwegian waters. Transferred to Britain in 1945, but returned to Belgium in Oct 1950. No. A 957 (ex-AP 907). Troop Transport until 1960. Re-rated Command and Logistical Support Ship for Minesweepers (and Training Ship) in 1962.



KAMINA

1966, Skyfotos

Support Ships—continued

1 New Construction

A 961

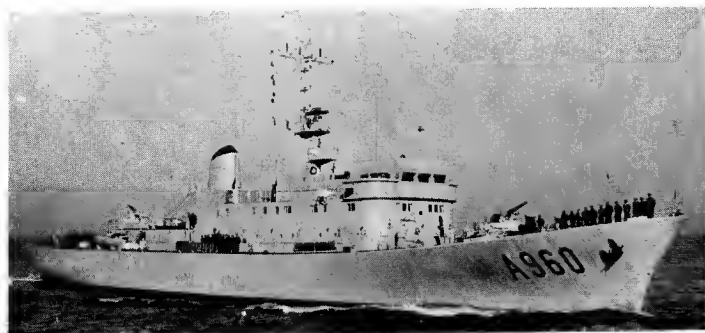
Displacement, tons	1 800 light; 2 600 full load
Dimensions, feet	309 wl; 326 oa × 46 × 12 max
Guns	3—40 mm AA (single)
Main engines	2 Cockerill diesels; 1 shaft
Radius, miles	5 000 bhp = 19 knots max
Complement	10 000 at 15 knots (economical speed with one engine)
	125

Laid down at Hoboken by J. Cockerill at the end of 1966. Controllable pitch propeller. Design includes a platform and a hangar for one light liaison-helicopter.

GODETIA A 960

Displacement, tons	1 700 light; 2 300 full load
Dimensions, feet	289 wl; 301 oa × 46 × 11.5
Guns	4—40 mm (2 twin) AA
Main engines	4 ACEC—MAN diesels; 2 shafts; 5 400 bhp = 19 knots max
Radius, miles	6 000 at 15 knots (economical speed with two engines)
Complement	100 plus 35 spare billets

Built at Temse by J. Boel and Sons. Laid down on 15 Feb 1965, launched on 7 Dec 1965 and completed on 2 June 1966. Controllable pitch propellers. Provided with a platform which can take a light liaison-helicopter, and has Royal Apartments. Pennant number allocated: A 960. Rated as Logistic Support and Command Ship.



GODETIA

1967, Belgian Navy, Official



GODETIA

1966, Skyfotos

1 Ex-British Ocean Minesweeper

ADRIEN DE GERLACHE (ex-HMS Liberty) A 954

Displacement, tons	1 040 standard; 1 335 full load
Dimensions, feet	212.5 pp; 221 wl; 225 oa × 35.5 × 11
Guns	2—40 mm AA
Main engines	Geared turbines; 2 shafts; 2 000 shp = 16 knots
Boilers	2 of 3-drum type

Former British ocean minesweeper of the "Algerine" class, subsequently reclassified as a coastal escort and again re-rated as a Command and Logistic Support Ship for Minesweepers in 1960. Built by Harland & Wolff. Laid down on 27 Nov 1943, launched on 22 Aug 1944, and completed on 18 Jan 1945. Transferred from Royal Navy to Belgian Navy on 27 Nov 1949.



ADRIEN DE GERLACHE

1966, Belgian Navy, Official

COASTAL MINESWEEPERS

(Dragueurs de Mines Cotiers)

23 U.S. MSC (ex-AMS) Type 60

M 923 BLANKENBERGE (ex-MS-C 170)	M 912 LIER (ex-MS-C 63)
M 917 CHARLEROI (ex-MCS 152)	M 913 MAASEIK (ex-MS-C 78)
M 925 DE PANNE (ex-MS-C 131)	M 922 MALMEDY (ex-MS-C 154)
M 910 DIEST (ex-MS-C 77)	M 926 MECHELEN
M 920 DIKSMUIDE (ex-MS-C 65)	M 932 NIEUWPOORT
M 911 EKKLO (ex-MS-C 101)	M 930 ROCHEFORT
M 929 HEIST	M 918 ST. NIKLAAS (ex-MS-C 64)
M 921 HERVE (ex-MS-C 153)	M 919 ST. TRUIDEN (ex-MS-C 169)
M 931 KNOCKE	M 927 SPA
M 933 KOKSIJDE	M 928 STAVELOT
M 924 LAROCHE (ex-MS-C 171)	M 934 VERVIERS (ex-MS-C 259)
	M 935 VEURNE (ex-MS-C 260)

Displacement, tons	330 light; 390 full load
Dimensions, feet	139 pp; 144 oa × 27.9 × 7.5 (8 max)
Guns	1—40 mm AA
Main engines	2 GM Diesels; 2 shafts; 880 bhp = 13.5 knots max
Oil fuel (tons)	28
Range, miles	2 700 at economical speed (10.5 knots)
Complement	39

Motor minesweepers with wooden hulls and constructed throughout of materials with the lowest possible magnetic attraction to attain the greatest possible safety factor when sweeping for magnetic mines. M 910-925, 934 and 935 were built in USA, under MDAP, and M 926-933 of same type were built in Belgium under MAP with machinery and equipment from USA. M 910 (ex-MS-C 77, ex-AMS 77) turned over 12 May 1953, at Boston, M 919 (ex-MS-C 169, ex-AMS 169) turned over 25 Feb 1954, at New York Naval Shipyard, Brooklyn, M 925 (ex-MS-C 131, ex-AMS 131) transferred 28 Oct 1955, M 934 (ex-MS-C 259) turned over 19 June 1956, M 935 (ex-MS-C 260) was transferred on 7 Sep 1956. M 926 to 933 were all laid down in 1953-54 and launched and completed in 1954-55, M 926 *Mechelen*, is actually used as a research ship.

TRANSFERS. M 914, *Roeselaere* (ex-MS-C 103), M 915, *Arlon* (ex-MS-C 104) and M 916, *Bastogne* (ex-MS-C 151) were transferred to the Royal Norwegian Navy in summer 1966 by the Belgian Naval Force.

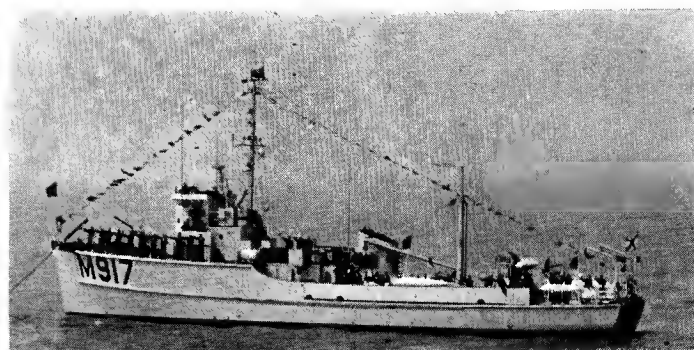
DISPOSAL

The research ship *Eupen* (ex-*Eureka*, ex-BYMS 11, ex-*Young Joe*), former coastal minesweeper, was officially deleted from the list in 1964 as she had become obsolete.



HEIST

1966, courtesy Godfrey H. Walker, Esq



CHARLEROI

1967, Belgian Navy, Official



ROCHEFORT

INSHORE MINESWEEPERS

(*Dragueurs de Mines de Petits Fonds*)

16 MSI "Herstal" Class

M 485 ANDENNE (ex-MSI 97) May 1958	M 483 OUGREE (ex MSI 95) 16 Nov 1957
M 484 DINANT (ex-MSI 96) 5 Apr 1958	
M 471 HASSELT 17 Nov 1956	M 480 SERAING (ex-MSI 92) 16 Mar 1957
M 478 HERSTAL (ex-MSI 90) 6 Aug 1956	
M 479 HUY (ex-MSI 91) 17 Nov 1956	M 470 TEMSE 6 Aug 1956
M 472 KORTRIJK 16 Mar 1957	M 475 TONGEREN 16 Nov 1957
M 473 LOKEREN 18 May 1957	M 481 TOURNAI (ex-MSI 93) 18 May 1957
M 476 MERKSEM 5 Apr. 1958	
M 477 OUDENAERDE May 1958	M 474 TURNHOUT 7 Sep 1957
	M 482 VISE (ex-MSI 94) 7 Sep 1957

Displacement, tons	160 light (190 full load)
Dimensions, feet	106 7 pp; 113-2 oa x 22-3 x 6 (7 max)
Guns	1—13 mm AA
Main engines	2 diesels; 2 shafts; 1 260 bhp = 15 knots max
Oil fuel (tons)	18
Range, miles	2 300 at 10 knots
Complement	17

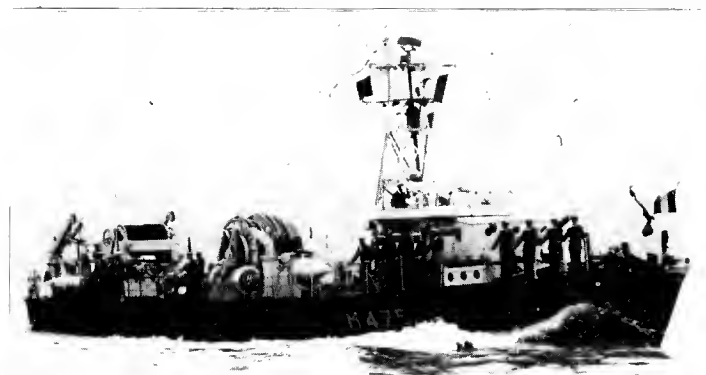
MSI type. Modified AMI "100-foot" class. All built in Belgium. The first four MSI were launched in 1956. *Herstal* and *Temse* were both launched at the Mercantile Marine Yard, Kruibeche, on 6 Aug 1956, followed by another pair in 1956, and four more pairs in 1957 (see launch dates above). *Herstal* was completed in June 1957. The first group of eight (M 47B to 485) was a United States "off shore order", the remaining eight (M 470 to 477) being financed under the Belgian Navy Estimates.

PHOTOGRAPHS. A photograph of *Kortrijk* appears in the 1959-60 to 1964-65 editions.



ANDENNE

1966, Belgian Navy, Official



TONGEREN

1964, Belgian Navy, Official



SERAING

1963, Belgian Navy, Official

AUXILIARY CRAFT

HARBOUR CRAFT. There are three barges, namely *FN 4*, *FN 5*, and *FN 6*, displacement 300 tons, length, 105 feet, built in the Netherlands; the ammunition ship *Ekster*, displacement 140 tons, length 118 feet, built in Belgium in 1953; two diving cutters, *ZM 3* and *ZM 4*, displacement 8 tons, length 33 feet, built in Belgium in 1953; and the harbour transport cutter *Spin*, displacement 32 tons, length 47-8 feet, with 250 bhp diesels = B knots and Voith-Schneider propeller, built in the Netherlands in 1958.

There are also two port tugs, *Bij* and *Krekel*, displacement 71 tons, length 57-8 feet. 2 Voith-Schneider propellers, 400 hp; three harbour tugs, *Hommel* and *Wesp*, displacement 22 tons, length 43 feet, with 300 bhp diesels and Voith-Schneider propellers; built in Germany in 1953; and *Mier*, displacement 17-5 tons, length 41 feet, with 80 bhp diesels and Voith-Schneider propellers, built in Belgium in 1962.

RIVER PATROL BOATS (*Vedettes Fluviales*)

IJZER	LEIE LIBERATION	MEUSE	SAMBRE	SCHELDE SEMOIS
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Displacement, tons	25 light; 27-5 full load
Dimensions, feet	75-5 pp; 82 oa x 12-5 x 3 feet (<i>Liberation</i> 85-5 x 13-1 x 3-2)
Guns	2—13 mm MG
Main engines	2 diesels; 2 shafts, 440 bhp = 19 knots
Complement	7

Built at the Theodor Shipyards of Regensburg, Germany, in 1953, except *Liberation* in 1954. *Dender*, *Ourthe* and *Rupel* were officially deleted from the list in 1965.



SAMBRE

1966, Belgian Navy, Official

RESEARCH SHIP (*Bâtiment d'Études*)

ZENOBE GRAMME A 95B

Displacement, tons	149
Dimensions, feet	92/76 x 22-5 x 7 feet
Main engines	1 MWM diesel; 1 shaft; 200 bhp = 10 knots
Complement	14

Built by J. Boel in Temse, Belgium, in 1961. Designed for scientific research.



ZENOBE GRAMME

1966, Belgian Navy, Official

TUGS (*Remorqueurs*)

SUB-LIEUTENANT VALCKE A 950

Displacement, tons	110
Dimensions, feet	78 B pp 95 oa x 21 x 5-5
Main engines	1 diesel; 1 shaft; 600 bhp = 12 knots
Complement	14

Built in Haarlem, Netherlands in 1951. See port tugs, bottom of Col. 1.



SUB-LIEUTENANT VALCKE

1966, courtesy Godfrey H. Walker, Esq.

BRAZIL

Administration

Minister of the Navy:
Admiral Zilmar Campos de Araripe Macedo

Chief of Naval Staff:
Admiral Silvio Monteiro

Diplomatic Representation

Naval Attaché in London:
Captain Antonio Avila de Malafaia

Naval Attaché in Washington:
Rear Admiral Joao Baptiste Francisconi
Serran

Strength of the Fleet

- 1 Aircraft Carrier
- 4 Submarines (Diesel Powered)
- 2 Cruisers
- 12 Destroyers
- 6 Frigates (Destroyer Escorts)
- 4 Coastal Minesweepers
- 6 Survey Ships (2 Frigate Type)
- 10 Corvettes (Ocean Tug Type)
- 3 Seaward Defence Boats
- 2 River Monitors
- 6 River Gunboats
- 30 Support Ships and Service Craft

Naval Bases

There are naval bases at Rio de Janeiro, Belem, Natal, Recife and Salvador, and a river base at Ladario.

Naval Aviation

A Fleet Air Arm was formed in 1957, including anti-submarine aircraft and helicopters.

Personnel

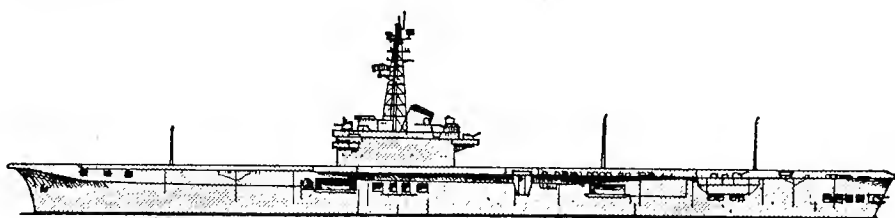
1967 : 3,000 officers and 50,000 men including Marines

Mercantile Marine

Lloyd's Register of Shipping:
392 vessels of 1,279,339 tons gross

Silhouettes

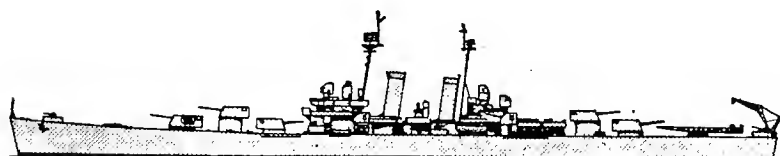
Scale: 150 feet = 1 inch



MINAS GERAIS



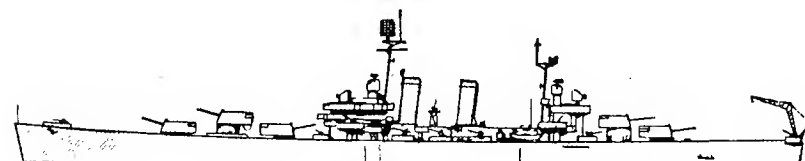
CANOPUS, SIRIUS



TAMANDARÉ



PERNAMBUCO



BARROSO



PARA Class



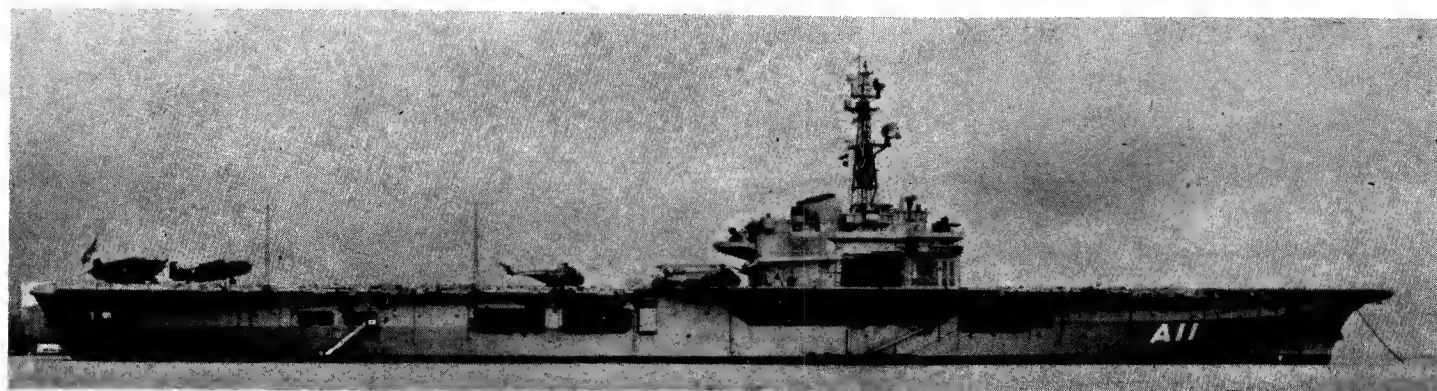
AMAZONAS Class



MARCILIO DIAS Class



BERTIOGA Class



MINAS GERAIS (starboard broadside view) see next page

1962, Brazilian Navy, Official

AIRCRAFT CARRIER (NAel)

	Pennant No.	Builders	Laid down	Launched	Completed	Reconstructed
MINAS GERAIS (ex-HMS Vengeance)	A 11	Swan, Hunter & Wigham Richardson, Ltd, Wallsend-on-Tyne	16 Nov 1942	23 Feb 1944	15 Jan 1945	Verolme Dock, Rotterdam, 1957-60

1 Ex-British Type ("Colossus" Class)

Displacement, tons	15 890 standard; 17 500 normal; 19 890 full load (see <i>Displacement</i> note)
Length, feet (metres)	630 (192.0) pp; 695 (211.8) oa
Beam, feet (metres)	80 (24.4)
Draught, feet (metres)	21.5 (6.6) mean
Flight deck, Length, feet (metres)	690 (210.3)
Width, feet (metres)	121 (37.0) oa as reconstructed
Height, feet (metres)	39 (11.9) above water line
Catapults	1 steam
Aircraft	21 capacity
Guns, AA	10—40 mm (2 quadruple, 1 twin)
Guns, saluting	2—47 mm
Boilers	4 Admiralty 3-drum type; Working pressure 400 psi (28 kg/cm ²); max superheat 700°F (371°C)
Main engines	Parsons geared turbines 40 000 shp; 2 shafts
Speed, knots	25; sea speed 24.25; 25.3 on trials after reconstruction (see <i>Engineering</i> note)
Radius, miles	12 000 at 14 knots 6 200 at 23 knots
Oil fuel (tons)	3 200
Complement	1 000 (1 300 with air group on board)

Served in British Navy from 1945 onwards. Fitted out in late 1948-early 1949 for experimental cruise to Arctic. Lent to the Royal Australian Navy early in 1953, but was returned to the Royal Navy in August 1955. British Admiralty announced on 14 Dec 1956 the purchase of *Vengeance* by the Brazilian Government. Reconstructed at Verolme Dock, Rotterdam (Verolme United Shipyard's Rosenberg yard) from summer 1957 to Dec 1960. The conversion and overhaul included the installation of the angled deck, steam catapult, mirror sight deck landing system, and complete armament fire control and radar equipment. The ship was purchased for \$9 000 000 and the reconstruction cost \$27 000 000. Commissioned in Brazilian Navy at Rotterdam on 6 Dec 1960. Left Rotterdam for Rio de Janeiro on her maiden voyage as *Minas Gerais* on 13 Jan 1961. Used primarily for anti-submarine warfare aircraft and helicopters.



MINAS GERAIS

1966, Brazilian Navy, Official

ENGINEERING. Engines and boilers are arranged *en echelon*, the two propelling machinery spaces having one set of turbines and two boilers installed side by side in each space, on the unit system, so that the starboard propeller shaft is longer than the port shaft. Maximum speed is 25 knots at 120 revolutions per minute. Boiler capacity was increased when boilers were retubed during reconstruction in 1957-60.

ELECTRICAL. During reconstruction a complete alternating current system was built into the ship, and a total of 2 500 kW supplied by four turbo-generators and one diesel generator.

CONSTRUCTION. Damage control: No great measure of vertical sub-division on the sandwich system as it was reckoned that it is better for ships to settle evenly in the event of damage and flooding than to foster capsizing. Insulated for tropical service and partially air-conditioned.

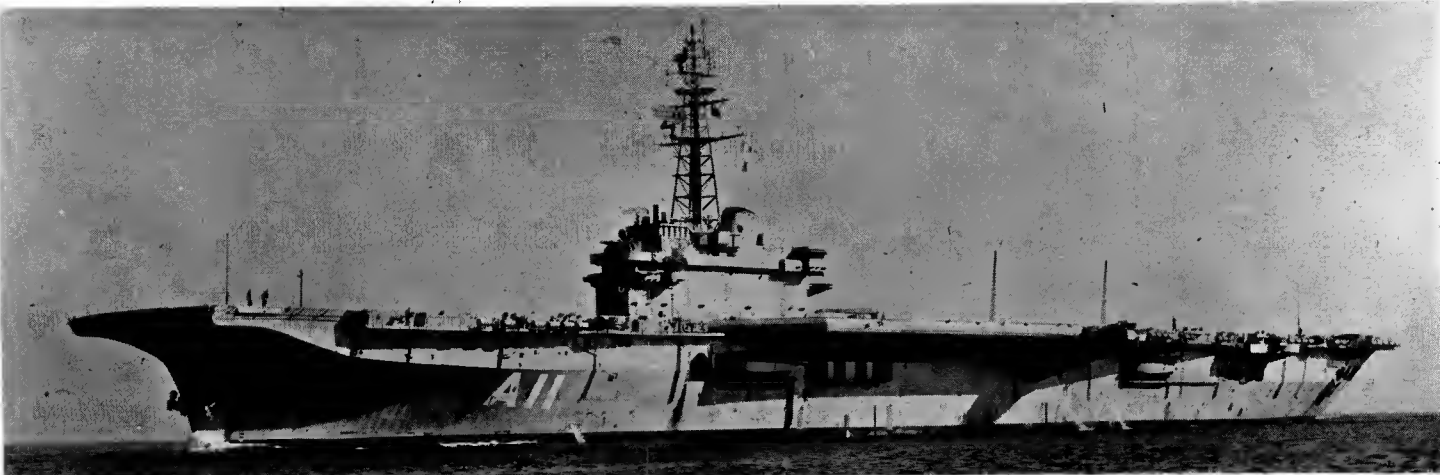
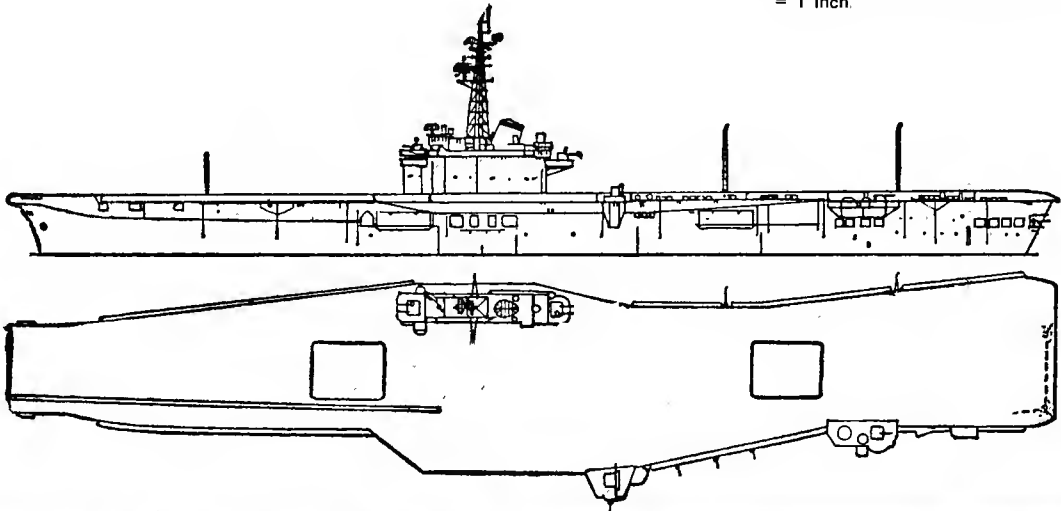
OPERATIONAL. Arrestor wires to take 20 000 lb aircraft up to 60 knots. Single track catapult for launching 20 000 lb aircraft at 60 knots. Catapult accelerator gear port side forward. Flight deck originally designed for 14 000 lb aircraft reinforced to take 20 000 lb machines.

HANGAR. Dimensions of hangar are: Length, 445 feet; width, 52 feet; clear depth, 17.5 feet. Dimensions of aircraft lifts were: 45 feet by 34 feet. During reconstruction in 1957-60 new aircraft lifts replaced the original units.

PHOTOGRAPHS. Photographs of this ship before reconstruction appear in the 1957-58 edition (port bow aerial view and starboard bow aerial view) and in the 1958-59 to 1960-61 editions (starboard bow oblique aerial view and starboard broadside view).

DISPLACEMENT. The displacement before reconstruction was 13 190 tons standard and 18 010 tons full load.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.



MINAS GERAIS

Wright & Logan

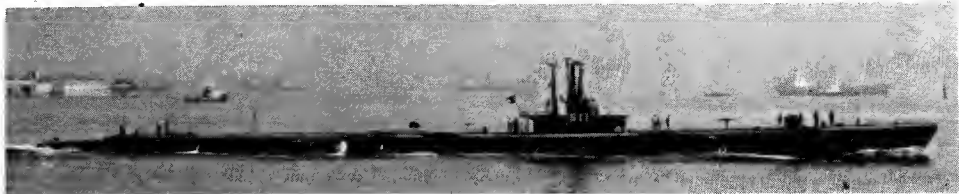
SUBMARINES (Submarinos) (SE)

2 Ex-U.S. "Balao" Class

	Pennant No.	Builders	Launched	Completed
BAHIA (ex-USS <i>Plaice</i> , SS 390)	S 12	Portsmouth Naval Shipyard	15 Nov 1943	12 Feb 1944
RIO GRANDE DO SUL (ex-USS <i>Sand Lance</i> , SS 381, ex- <i>Orca</i> , ex- <i>Orjanco</i>)	S 11	Portsmouth Naval Shipyard	25 June 1943	9 Oct 1943

Displacement, tons	1 526 standard; 1 816 surface; 2 400 submerged
Length, feet (metres)	311.5 (94.9)
Beam, feet (metres)	27 (8.2)
Draught, feet (metres)	17 (5.2)
Torpedo tubes	10—21 in (533 mm); 6 bow, 4 stern
Main engines	6 500 bhp FM 2-stroke diesels; 5 500 hp electric motors
Speed, knots	20 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300

Lent to Brazil for five years after overhaul at Pearl Harbour Naval Shipyard in Sep 1963



BAHIA 1966, Brazilian Navy, Official

2 Ex-U.S. "Gato" Class

	Pennant No.	Builders	Laid down	Launched	Completed
HUMAITA (ex-USS <i>Muskallunge</i> SS 262)	S 14	Electric Boat Co.	7 Apr 1942	13 Dec 1942	15 Mar 1943
RIACHUELO (ex-USS <i>Paddle</i> SS 263)	S 15	Electric Boat Co.	1 May 1942	30 Dec 1942	29 Mar 1943

Displacement, tons	1 525 standard; 1 816 surface; 2 425 submerged
Length, feet (metres)	311.8 (95.0)
Beam, feet (metres)	27 (8.2)
Draught, feet (metres)	17 (5.2)
Torpedo tubes	10—21 in (533 mm); 6 bow, 4 stern
Main engines	6 500 bhp GM 2-stroke diesels; 2 750 shp Allis-Chalmers electric motors
Speed, knots	21 on surface, 10 submerged
Complement	85

Lent to Brazil for five years after overhaul at Philadelphia Naval Shipyard in Jan 1957. Have two engine rooms to reduce size of compartments.

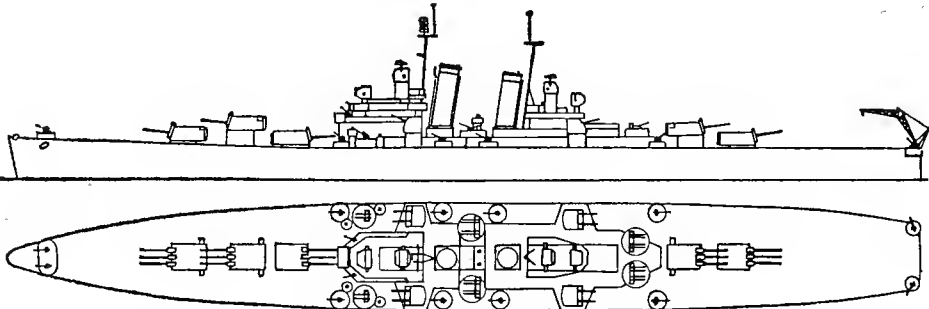


RIACHUELO 1962, Brazilian Navy, Official

CRUISERS (CL)

	Pennant No.	Builders	Laid down	Launched	Completed
TAMANDARÉ (ex-USS <i>St. Louis</i> , CL 49)	C 12	Newport News S.B. & DD.. Co.	10 Dec 1936	15 Apr 1938	10 Dec 1939

Displacement, tons	10 000 standard; 13 500 full load
Length, feet (metres)	608.5 (185.5) oa
Beam, feet (metres)	69 (21.0)
Draught, feet (metres)	24 (7.3) max
Aircraft	1 Helicopter (see <i>Hangar</i> notes)
Guns, surface	15—6 in (153 mm) 47 cal (5 triple)
Guns, dual purpose	8—5 in (127 mm) 38 cal (4 twin)
Guns, AA	28—40 mm, 8—20 mm
Armour, inches (mm)	Belt 5 in—1½ in (127—38); Decks 3 in+2 in (76+51) Turrets 5 in—3 in (127—76); C.T. 8 in (203)
Boilers	8 Babcock & Wilcox Express
Main engines	Westinghouse geared turbines 100 000 shp; 4 shafts
Speed, knots	32.5
Radius, miles	14 500 at 15 knots
Oil fuel (tons)	2 100
Complement	975

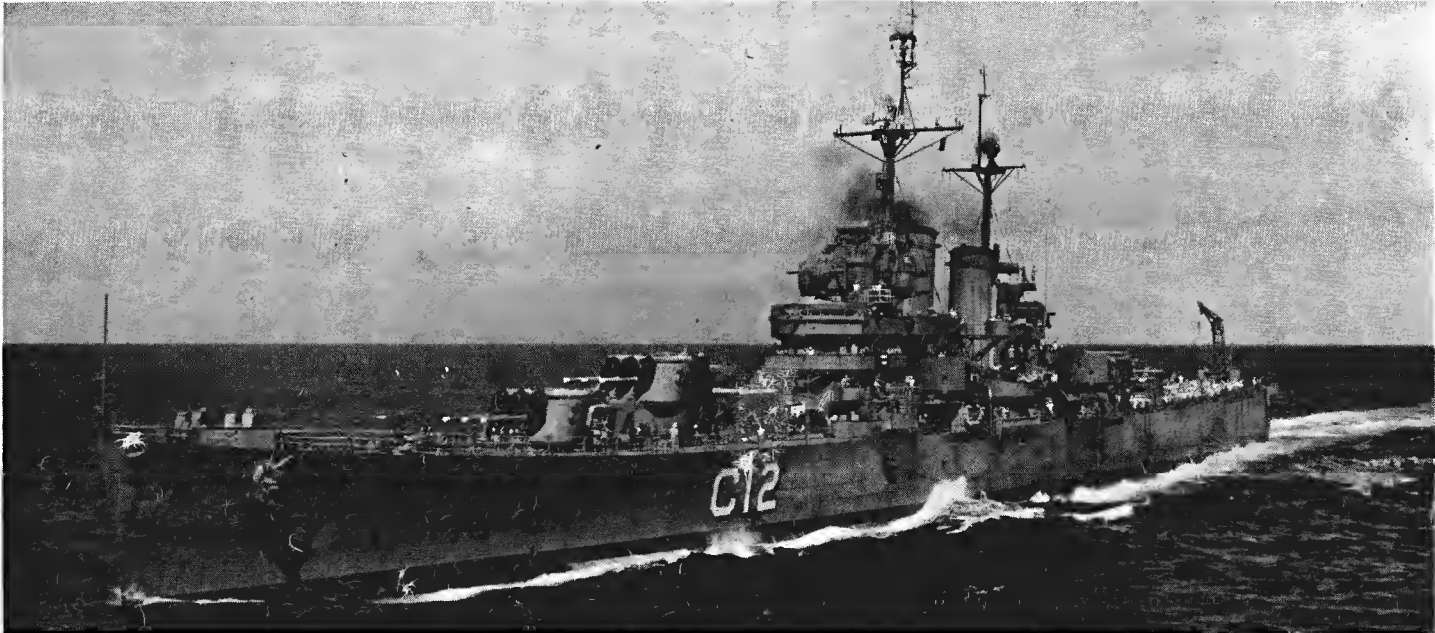


"St Louis" class. Transferred from USA on 29 Jan 1951. Differs from *Barroso* in 5-inch guns paired in roomy gunhouses on high bases, different boat stowage, small tripod mast immediately abaft 2nd funnel, and after gunnery control redistributed.

HANGAR. The hangar in the hull right aft could originally accommodate 6 aircraft if necessary together with engine spares and duplicate parts, though 4 aircraft was the normal capacity. The incorporation of this hangar resulted in a very wide and nearly flat counter and high freeboard aft and also gave the after guns higher com-

mand. Above the hangar two catapults were mounted as far outboard as possible, and a revolving crane was placed at the stern extremity overhanging the aircraft hatch.

DRAWING. Port elevation and plan. Scale. 12B feet = 1 inch.

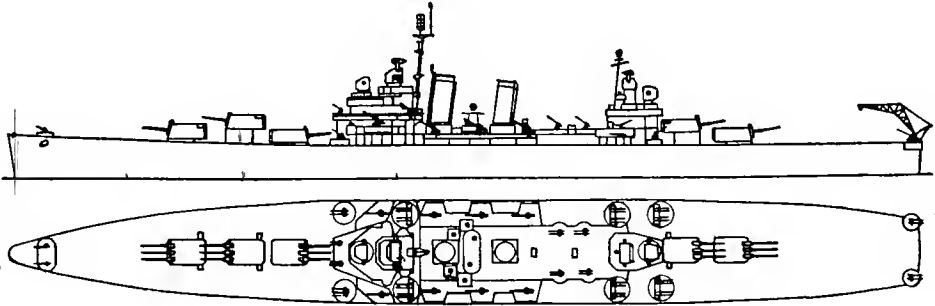


TAMANDARÉ

1963, Brazilian Navy, Official

Cruisers—continued

	Pennant No.	Builders	Laid down	Launched	Completed
BARROSO (ex-USS <i>Philadelphia</i> , CL 41)	C 11	Philadelphia Navy Yard	28 May 1935	17 Nov 1936	28 July 1938
Displacement, tons	9 700 standard; 13 000 full load				
Length, feet (metres)	600 (182·9) wl; 608·5 (185·5) oa				
Beam, feet (metres)	69 (21·0) with bulges				
Draught, feet (metres)	19·8 (6·0) mean; 24 (7·3) max				
Aircraft	1 Helicopter				
Guns, surface	15—6 in (153 mm) 47 cal (5 triple) 8—5 in (127 mm) 38 cal single				
Guns, AA	28—40 mm, 20—20 mm				
Armour, inches (mm)	Belt 4 in—1½ in (102—38); decks 3 in and 2 in (76 and 51) Turrets 5 in—3 in (127—76); C.T. 8 in (203)				
Boilers	8 Babcock & Wilcox Express				
Main engines	Westinghouse geared turbines 100 000 shp; 4 shafts				
Speed, knots	32·5				
Radius, miles	14 500 at 15 knots				
Oil fuel (tons)	2 100				
Complement	888				



"Brooklyn" class. Purchased from the United States in 1951. Originally two catapults were mounted on the quarter deck for launching the aircraft (see *Hangar Notes* under *Tamandaré*). Commissioned in the Brazilian Navy on 21 Aug 1951.

CLASS SISTERS. Originally a sister ship of *General Belgrano* (ex-17 *de Octubre*, ex-USS *Phoenix*) and *Nueve de Julio*, ex-USS *Boise*) in the Argentine Navy, and *O'Higgins* (ex-USS *Brooklyn*) and *Prat* (ex-USS *Nashville*) in the Chilean Navy.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.



BARROSO Brazilian Navy, Official

DESTROYERS (Contratorpedeiros) (CT)

4 British Design "Amazonas" Class

Name	Laid down	Launched	Completed
ACRE	28 Dec 40	30 May 45	10 Dec 51
AMAZONAS	20 July 40	29 Nov 43	10 Nov 49
ARAGUAIA	20 July 40	24 Nov 43	3 Sep 49
ARAGUARI	28 Dec 40	14 July 46	23 June 51

Displacement, tons	1 450 standard; 1 800 full load
Length, feet (metres)	323 (98·5) oa
Beam, feet (metres)	35 (10·7)
Draught, feet (metres)	9 (2·7)
Guns, surface	3—5 in (127 mm) 38 cal.
Guns, AA	4—40 mm (2 twin); 2—20 mm
A/S weapons	4 DCT
Torpedo tubes	6—21 in (533 mm), two triple
Boilers	3 three-drum type
Main engines	Parsons geared turbines 34 000 shp;
Speed, knots	34
Oil fuel (tons)	150
Complement	200

All built by Ilha das Cobras, Rio de Janeiro, to a British design. Named after rivers. Refitted with tripod mast. Pennant Nos. respectively, D 10, D 12, D 14, D 15.

Of this class, *Ajuricaba*, D 11, and *Apa*, D 13, were officially removed from the list in 1964.

1 "Marcilio Dias" Class

Name	No.	Launched	Completed
MARIZ E BARROS	D 26	28 Dec 40	1944

Displacement, tons	1 500 standard; 2 200 full load
Length, feet (metres)	341 (104·0) pp; 360 (109·7) oa
Beam, feet (metres)	35 (10·7)
Draught, feet (metres)	12 (3·7) max
Guns, dual purpose	4—5 in (127 mm) 38 cal.
Guns, AA	2—40 mm, 6—20 mm
Torpedo tubes	4—21 in (533 mm) quadrupled
Boilers	4 Babcock & Wilcox Express
Main engines	GE geared turbines 42 800 shp
Speed, knots	36·5
Radius, miles	6 000
Oil fuel (tons)	550
Complement	210

US design but built at Ilha das Cobras, Rio de Janeiro, with material from US. Generally similar to US destroyers and armed with US guns. Laid down in 1937 and commissioned on 29 Nov 1943.



AMAZONAS 1963, Brazilian Navy, Official



MARCILIO DIAS 1960, Brazilian Navy, Official

GUIDED WEAPONS. It was officially stated in 1966 that *Mariz e Barros* will be refitted for the installation of British "Seacat" guided missile launchers.

DISPOSALS
Sister ships *Greenhalgh*, D 24, and *Marcilio Dias*, D 25, were officially deleted from the list in 1966.

Destroyers—continued

Name	Pennant No.	Builders	Laid down	Launched	Completed
PARA (ex-USS <i>Guest</i> , DD 472)	D 27	Boston Navy Yard	27 Sep 1941	20 Feb 1942	15 Dec 1942
PARAIBA (ex-USS <i>Bennett</i> , DD 473)	D 28	Boston Navy Yard	10 Dec 1941	16 Apr 1942	9 Feb 1943
PARANA (ex-USS <i>Cushing</i> , DD 797)	D 29	Bethlehem Steel Co (Staten Island)	3 May 1943	30 Sep 1943	17 Jan 1944
PERNAMBUCO (ex-USS <i>Hailey</i> , DD 556)	D 30	Seattle-Tacoma S.B. (Corpn, Seattle)	11 Apr 1942	9 Mar 1943	30 Sep 1943
PIAUI (ex-USS <i>Lewis Hancock</i> , DD 675)	D 31	Federal S.B. & D.D. Co.		1 Aug 1943	29 Sep 1943
(ex-USS <i>Melvin</i> , DD 680)		Federal S.B. & D.D. Co.		17 Oct 1943	24 Nov 1943
(ex-USS <i>Sigsbee</i> , DD 502)		Federal S.B. & D.D. Co.	22 July 1942	7 Dec 1942	22 Jan 1943

7 Ex-U.S. "Fletcher" Type. "Para" Class

Displacement, tons	2 100 standard; 3 050 full load
Length, feet (metres)	376.5 (114.8) oa
Beam, feet (metres)	39.3 (12.0)
Draught, feet (metres)	18 (5.5) max
Guns, dual purpose	5—5 in (127 mm) 38 cal; 4 in <i>Pernambuco</i>
Guns, AA	10—40 mm (2 quadruple and 1 twin) except in <i>Pernambuco</i> : 6—3 in (76 mm) 50 cal (3 twin) and <i>Para</i> : 6—40 mm (3 twin)
Torpedo tubes	5—21 in (533 mm)
A/S weapons	2 Hedgehogs; 1 DC rack; 2 side launching torpedo racks
Boilers	4 Babcock & Wilcox
Main engines	2 sets GE geared turbines 60 000 shp; 2 shafts
Speed, knots	35
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	262 (15 officers, 247 men)

Cushing, *Lewis Hancock* and *Melvin* are of the later "Fletcher" class and the other four are of the "Fletcher" class. *Bennett*, *Cushing*, *Guest* and *Hailey* were acquired from USA in 1959 on loan for five years, subsequently extended. *Guest* was transferred to Brazil on 5 June 1959, *Bennett* on 15 Dec 1959 at Bremerton, Washington, *Cushing* and *Hailey* on 20 July 1961, at Norfolk Naval Shipyard, Portsmouth, Virginia. Re-activation of *Lewis Hancock* was scheduled for com-



PERNAMBUCO (four 5-inch guns) 1962, Brazilian Navy, Official

pletion on 28 Apr 1967, and *Melvin* and *Sigsbee* will be transferred in 1967. PHOTOGRAPHS. A photograph of *Para* (five 5-inch guns) appears in the 1960-61 and 1962-63 editions.

FRIGATES (Destroyer Escorts) (Officially rated as *Avisos Oceanicos*)

6 Ex-U.S. DE Type. "Bertioga" Class

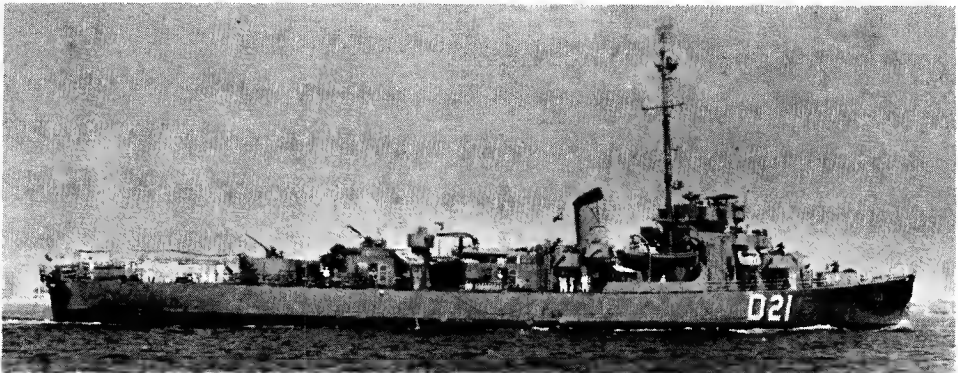
Name	No.	Laid down	Launched	Completed
BAEPENDI (ex-USS <i>Cannon</i> , DE 99)	D 17	14 Nov 1942	25 May 1943	26 Sep 1943
BAURU (ex-USS <i>Reybold</i> , DE 177)	D 18	17 May 1943	22 Aug 1943	11 Oct 1943
BEBERIBE (ex-USS <i>Herzog</i> , DE 178)	D 19	17 May 1943	5 Sep 1943	6 Oct 1943
BENEVENTE (ex-USS <i>Christopher</i> , DE 100)	D 20	7 Dec 1942	June 1943	23 Oct 1943
BOCAINA (ex-USS <i>Marts</i> , DE 174)	D 22	26 Apr 1943	8 Aug 1943	3 Sep 1943
BRACUI (ex-USS <i>McAnn</i> , DE 179)	D 23	3 May 1943	5 Sep 1943	24 Sep 1943

Displacement, tons	1 240 standard; 1 900 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draught, feet (metres)	12 (3.7)
Guns, dual purpose	3—3 in (76 mm)
Guns, AA	2—40 mm, 4—20 mm
Torpedo tubes	3—21 in (533 mm)
Main engines	4 GE diesels; 2 electric motors; diesel-electric drive 6 000 bhp; 2 shafts
Speed, knots	19
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	200

Former US "Bostwick" class destroyer escorts, transferred in 1944. Built by Dravo, Wilmington, Del. (*Baependi*) and Federal, Port Newark (other five). Formerly designated CTE (Destroyer Escorts) but reclassified as *Avisos Oceanicos* in 1965.

PHOTOGRAPHS. A photograph of *Bocaina* appears in the 1962-63 edition.

Of this class, *Babitonga*, D 16, and *Bertioga*, D 21, were officially removed from the list in 1964.



BERTIOGA Brazilian Navy, Official

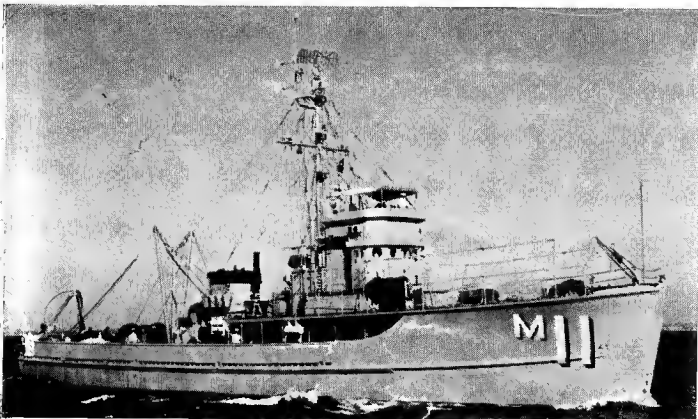
COASTAL MINESWEEPERS (NV)

4 Ex-U.S. MSCo Type. "Javari" Class

JAVARI (ex-USS <i>Cardinal</i>) M 11	JURUA (ex-USS <i>Jackdaw</i>) M 13
JURUENA (ex-USS <i>Grackle</i>) M 14	JUTAI (ex-USS <i>Egret</i>) M 12

Displacement, tons	270 standard; 350 full load
Dimensions, feet	136 x 24.5 x B max
Guns	4—20 mm in two twin mountings
A/S weapons	2 DCT
Main engines	2 GM diesels; 2 shafts; 1 000 bhp = 15 knots
Oil fuel (tons)	16
Radius, miles	2 300 at economical speed
Complement	50

Coastal motor minesweepers of wooden construction. All launched in 1942-43. Formerly known as Auxiliary Motor Minesweepers (AMS). Reclassified as Minesweepers, Coastal (old), MSC (o), in Feb 1955. *Cardinal*, MSCo4, and *Egret*, MSCo13, were transferred to Brazil by USA at Charleston Naval Shipyard on 15 Aug 1960 as the nucleus of a Brazilian mine force, and renamed after Brazilian rivers. *Jackdaw* MSCo21, was transferred in Jan 1963, and *Grackle* MSCo13, in Apr 1963. Used for patrol and escort duties.



JAVARI 1962, Brazilian Navy, Official

SURVEY SHIPS (Navios Hidrograficos) (NH)

2 Frigate Type

Name	Pennant No.	Laid down	Launched	Completed
CANOPUS	H 22	13 Dec 1956	20 Nov 1957	15 Mar 1958
SIRIUS	H 21	13 Dec 1956	30 July 1957	1 Jan 1958

Displacement, tons	1 463 standard
Measurement, tons	1 600 gross
Dimensions, feet	236.2 pp; 246 wl; 255.7 oa x 39.3 x 12.2
Guns	1—3 in AA; 4—20 mm MG
Main engines	2 diesels; 2 shafts; 2 700 bhp = 15.75 knots
Radius, miles	12 000
Complement	102

Built by Ishikawajima Heavy Industries Co. Ltd., Tokyo, Japan. Helicopter platform aft. Special surveying apparatus, echo sounders, Raydist equipment, sounding machines installed and helicopter, landing craft (LCVP), jeep, and survey launches carried. All living and working spaces are air-conditioned. Controllable pitch propellers. Cruising speed 11 knots. A photograph of *Canopus* appears in the 1958-69 to 1965-66 editions.



SIRIUS 1966, Hajime Fukaya

3 Coastal Type

Name	Pennant No.	Laid down	Launched	Completed
ARGUS	H 31	12 Dec 1955	6 Dec 1957	29 Jan 1959
ORION	H 32	12 Dec 1955	5 Feb 1958	11 June 1959
TAURUS	H 33	12 Dec 1955	7 Jan 1958	23 Apr 1959

Displacement, tons	250 standard; 300 full load
Dimensions, feet	138 pp; 147.7 oa x 20 x 6.6
Main engines	2 diesels coupled to two shafts; 1 200 bhp = 15 knots
Oil fuel (tons)	35

All built by Arsenal da Marinha, Rio de Janeiro and commissioned on dates shown as completed in table above. A photograph of *Orion* appears in the 1961-62 to 1965-66 editions.



ARGUS 1966, Brazilian Navy Official

ALMIRANTE SALDANHA U 10 (ex-NE 1)

Displacement, tons	3 325 standard; 3 825 full load
Dimensions, feet	262 pp; 307.2 oa x 52 x 18.2 mean
Main engines	Diesel; 1 400 bhp = 11 knots
Radius, miles	12 000
Complement	356

Former training ship with a total sail area of 25 990 sq ft and armed with four 4-in guns, one 3-in AA gun and four 3-pounders. Built by Vickers Armstrongs, Ltd, Barrow. Launched on 19 Dec 1933. Cost £314 500. Instructional minelaying gear was included in equipment. The single 21-in torpedo tube was suppressed. Re-classified as an Oceanographic Ship (NOC) Aug 1959, and completely remodelled by 1964. A photograph appears in the 1952-53 to 1959-60 editions.

SEAWARD DEFENCE BOATS (NPa)

3 "P" Class

PIRAJU J 28 (ex-P 1)	PIRANHA J 30 (ex-P 3)	PIRAQUE J 32 (ex-P 4)
Displacement, tons	130 standard	
Dimensions, feet	128 x 19.5 x 6	
Guns	1—3 in, 23 cal.; 2—20 mm AA	
A/S weapons	30 DC	
Main engines	Diesels; 3 shafts; 1 890 bhp = 20 knots	
Complement	30	

All launched in 1947-48. Built at Rio de Janeiro. The hulls are of wooden construction. A photograph of *Piranha* appears in the 1950-51 to 1960-61 editions. Of this class *Pirambu* P 2, and *Pirapia*, P 5, were officially removed from the list in 1964, and *Pirauna*, P 6, in 1960.

CORVETTES (Corvetas) (CV)

10 "Imperial Marinheiro" Class

ANGOSTURA V 20	FORTE DE COMBRA V 18	IPIRANGA V 17
BAHIANA V 21	IGUATEMI V 16	MEARIM V 22
CABOCLO V 19	IMPERIAL MARINHEIRO V 15	PURUS V 23
		SOLIMÕES V 24

Displacement, tons	911 standard
Dimensions, feet	184 x 30.5 x 11.7
Guns	1—3 in, 50 cal; 4—20 mm AA
Main engines	2 Sulzer diesels; 2 160 bhp = 16 knots
Oil fuel (tons)	135
Complement	60

All built in the Netherlands, launched in 1954-55, and incorporated into the Brazilian Navy in 1955. Actually fleet tugs. A photograph of *Imperial Marinheiro* appears in the 1956-57 and 1957-58 editions.



IPIRANGA added 1958, Official

RIVER MONITORS (Monitores) (M)

PARNAIBA U 17 (ex-P 2)

Displacement, tons	620 standard
Dimensions, feet	180.5 oa x 178.2 pp x 33.3 x 5 max
Guns	1—3 in, 50 cal; 2—47 mm; 2—40 mm AA; 6—20 mm AA
Armour	3 in side and partial deck protection
Main engines	2 Thornycroft triple expansion; 2 shafts; 1 300 ihp = 12 knots
Boilers	2 of 3-drum type, working pressure 250 psi
Oil fuel (tons)	70
Complement	90

Built at Rio de Janeiro. Laid down on 11 June 1936. Launched in Sep 1937, and completed in Nov 1937. In Matto Grosso Flotilla. Rearmed in 1960 (see guns above). For former armament see 1959-60 edition.

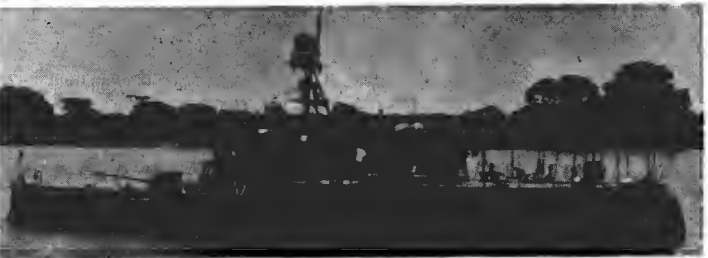


PARNAIBA 1967, Brazilian Navy, Official

PARAGUACU (ex-Victoria, ex-Espirito Santo) U 16 (ex-P 3)

Displacement, tons	430 standard
Dimensions, feet	146.5 x 34.8 x 5
Guns	1—3 in, 50 cal; 2—47 mm; 2—40 mm AA; 6—20 mm AA
Main engines	2 sets White triple expansion, 1 100 ihp = 13 knots
Boilers	2 of 3-drum type
Oil fuel (tons)	40
Complement	71

Built at Rio de Janeiro. Launched on 22 Dec 1938. In Matto Grosso Flotilla. Pennant Nos. U 16 (ex-P 3). Re-armed in 1960 (see guns above). For former armement see 1959-60 edition.



PARAGUACU 1966, Brazilian Navy, Official

GUNBOATS

PGM 109

Building in the United States for transfer to Brazil under MAP.

PGM 110

RIVER GUNBOATS (Avisos) (AV)**6 "Rio" Class**

RIO DAS CONTAS U 21	RIO FORMOSO U 22	RIO TURVO U 24
RIO DOCE U 20	RIO REAL U 23	RIO VERDE U 25

Displacement, tons 150 standard
 Dimensions, feet 121.5 x 21.3 x 9.7
 Main engines Diesel; 450 bhp = 15 knots

Built in the Netherlands in 1955-56. Officially classified as *aviso*s.



RIO DOCE

Added 1958, Official

REPAIR SHIPS**BELMONTE** (ex-USS *Helios*, ARB 12, ex-LST 1127) G 24

Displacement, tons 1 625 light; 4 100 full load
 Dimensions, feet 316 wl; 328 oa x 50 x 11
 Guns B-40 mm AA
 Main engines GM diesels; 2 shafts; 1 800 bhp = 11.6 knots

Former United States battle damage repair ship. Built by Maryland DD Co, Baltimore Md. Laid down on 23 Nov 1944. Launched on 14 Feb 1945. Completed on 26 Feb 1945. Loaned to Brazil by USA in Jan 1962 under MAP.

There is also *Ceara*, former US auxiliary repair dry dock *ARD 14*, transferred to Brazil and renamed: 5 200 tons displacement, 402 x 81 feet.

OILERS (Navios-Tanques) (NT)**ANITA GARIBALDI****GASTÃO MOUTINHO**

Displacement, tons 794 full load
 Dimensions, feet 150.5 pp; 162 oa x 23 x 8
 Main engines Diesel; 1 shaft
 Capacity, tons 505

Constructed at the Naval Dockyards in Rio de Janeiro. Commissioned in 1956.

MATARIPE (BO)**TAUBATÉ (BO)**

Displacement, tons 743
 Dimensions, feet 164.8 x 23.8 x 9.8
 Main engines Diesel; 1 shaft
 Capacity, tons 48B

ITAUPRA (BA) R 42**PAULO AFONSO (BA) R 43**

Displacement, tons 485.3
 Dimensions, feet 140.5 x 23 x 8
 Main engines Diesel; 1 shaft
 Capacity, tons 389

Itapura and *Paulo Afonso* are water tankers. Near sisters. Launched in 1957. *Mataripe* and *Taubaté* are oilers.

Name	Pennant No.	Laid down	Launched	Completed
RAZA (ex- <i>Klaskanine</i> AOG 63)	G 19 (ex-R 2)	21 Dec 44,	3 Feb 45	26 Feb 45
RIJO (ex- <i>Gualula</i> , AOG 28)	G 20 (ex-R 1)	24 Apr 44	3 June 44	19 Aug 44

Displacement, tons 2 22B full load
 Dimensions, feet 217.5 x 37 x 7
 Main engines Diesels; B50 bhp = 9 knots
 Capacity, tons 1 500
 Complement 41

Ex-US gasoline tankers USMC type TI-M-A2. Both built at East Coast Shipyards, Bayonne, N.J. A photograph of *Rijo* appears in the 1950-51 to 1959-60 editions.

GARCIA D'AVILA (ex-YO 71) G 12

Displacement, tons 1 400 tons
 Dimensions, feet 176.2 x 32 x 15
 Main engines Fairbanks Morse diesel; 5 cylinders; 2 cycle; 500 bhp = 10 kts

Former American yard oiler. Built in 1943. Purchased from the US Navy in 1947.

POTENGI G 17

Displacement, tons 600
 Dimensions, feet 175.5 pp; 17B.8 oa x 24.5 x 6
 Main engines Diesels; 2 shafts; 550 bhp = 10 knots
 Oil, tons 450
 Complement 19

Built at the Papendrecht yard in the Netherlands. Launched on 16 Mar 1938. Employed in the Matto Grosso Flotilla on river service.

TRANSPORTS (Navios-Auxiliares) (TrT)**4 "Pereira" Class**

Name	Pennant No.	Laid down	Launched	Completed
ARY PARREIRAS	G 21	13 Dec 1955	24 Aug 1956	29 Dec 1956
BARROSO PEREIRA	G 16	13 Dec 1953	10 Aug 1954	1 Dec 1954
CUSTÓDIO DE MELLO	G 15	13 Dec 1953	10 June 1954	30 Dec 1954
SOARES DUTRA	G 22	13 Dec 1955	13 Dec 1956	23 Mar 1957

Displacement, tons 4 800 standard; 7 300 full load
 Measurement, tons 4 200 deadweight; 4 879 gross (Panama)
 Dimensions, feet 362 pp; 391.8 oa x 52.5 x 20.5 max
 Guns 2—20 mm AA
 Main engines Ishikawajima double reduction geared turbines; 2 shafts; 4 800 shp = 17.67 knots (sea speed 15 knots)
 Boilers 2 Ishikawajima two drum water tube type, oil fuel
 Complement 127 (Troop capacity 1 972)

All built in Japan by Ishikawajima Heavy Industries Co, Ltd, Tokio. Transports and cargo vessels. Flush decks with forecandle and long poop. Elevator type helicopter landing platform laid on aft. Normal troop carrying capacity for 497 personnel, with commensurate medical, hospital and dental facilities. All working and living quarters are mechanically ventilated with partial air conditioning. Refrigerated cargo space of 15 500 cubic feet. Can carry 4 000 tons of cargo. *Barroso Pereira* and *Custódio de Mello* were incorporated into the Brazilian Navy on 22 Mar 1955 and 8 Feb 1955, respectively. Formerly armed with eight 40 mm AA guns. *Custódio de Mello* has been classified as a training ship since July 1961. A photograph of *Soares Dutra* appears in the 1958-59 to 1963-64 editions.



CUSTODIO DE MELLO

1964, Wright & Logan

TRAINING SHIP (Navio-Escola)**ALBATROS** (ex-*Wishbone*)

Displacement, tons 100
 Dimensions, feet 82.7 x 17.7
 Main engines Auxiliary diesel; 85 bhp = 5 knots
 Sail area 3 000 square feet

British auxiliary two-masted schooner yacht sold to the Brazilian Navy as a training ship. Employed as Naval College Training Yacht. Ballast (lead keel); 28 tons.

TUGS (Rebocadores) (R)**TRIDENTE** (ex-ATA 235) **TRITÃO** (ex-ATA 234) **TRIUNFO** (ex-ATA 236)

Displacement, tons 534 standard; 835 full load
 Dimensions, feet 133.7 wl; 143 oa x 33 x 13.2
 Guns 2—20 mm AA
 Main engines GM diesel-eléctric; 1 500 hp = 13 knots

All built by Gulfport Boiler & Welding Works, Inc, Port Arthur, Texas, and launched in 1954. Ex-US *ATRs*. Nos *Tridente* R 22, *Tritão* R 21, *Triunfo* R 23 (ex-R 2, R 1, R 3). A photograph of *Tridente* appears in the 1950-51 to 1957-58 editions.

AUDAZ R 31	GUARANI R 33	PASSO DA PATRIA R 35
CENTAURO R 32	LAMEGO R 34	VOLUNTARIO R 36

Measurement, tons 130 gross
 Dimensions, feet 82 pp; 90.5 oa x 23.3 x 7.5 fore; (1.2 aft)
 Main engines Wumang-diesel; 750 bhp = 11 knots

All built at Holland-Nautic Yard, Haarlem, Netherlands, in 1953.

LAURINDO PITTA R 14

Displacement, tons 514
 Dimensions, feet 130 x 26 x 15
 Main engines Triple expansion; 2 shafts; 850 ihp = 11 knots

Built in Great Britain by Vickers. Launched in 1910.

ANTONIO JOÃO R 26

Displacement, tons 80
 Dimensions, feet 75.5 x 17.2 x 6.7
 Main engines Fairbanks Morse diesels; 180 bhp

WANDENKOLK R 20

Displacement, tons 350
 Main engines 600 shp

BRUNEI**FAST PATROL BOAT****1 New Construction****PAHLAWAN**

Displacement, tons 95 standard; 114 full load
 Dimensions, feet 90 pp; 96 wl; 99 oa x 25.2 x 7
 Guns 1—40 mm; 1—20 mm
 Main engines 3 Bristol Siddeley Proteus gas turbines; 3 shafts; 12 750 bhp = 54 knots; 2 diesels for cruising and manoeuvring.
 Complement 20

Ordered from Vosper Ltd, Portsmouth, England, on 10 Dec 1965. Launched on 5 Dec 1966. Constructed of resin bonded timber with aluminium alloy superstructure. Similar to Vosper motor torpedo boats built for the Royal Danish Navy. Delivery due in 1967.

BULGARIA

Administration

Strength of the Fleet

Personnel

Commander-in-Chief, Navy:
Vice-Admiral Dobrev
Diplomatic Representation
Naval Attaché in London:
Colonel I. Kochovski
Naval Attaché in Washington:
Colonel Tzvetko Tomov

- 2 Submarines
- 2 Medium Escorts
- 8 Coastal Escorts
- 6 Medium Minesweepers
- 14 Motor Torpedo Boats
- 16 Landing Craft
- 27 Training and Service Craft

1967 : 4,000 officers and ratings

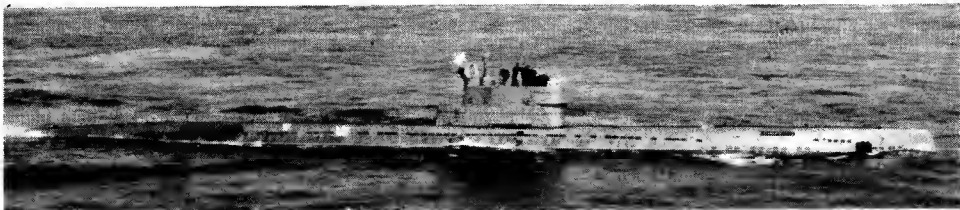
Mercantile Marine

Lloyd's Register of Shipping:
84 vessels of 396,643 tons gross

SUBMARINES

2 "W" Type

Displacement, tons 1 030 surface; 1 180 submerged
Length, feet (metres) 245 (74.7) oa
Beam, feet (metres) 23.6 (7.2)
Draught, feet (metres) 14.8 (4.5)
Guns, AA 4—25 mm
Torpedo tubes 6—21 in (533 mm), 4 bow, 2 stern
Main engines 4 000 hp diesels (surface)
2 500 hp electric motors (submerged)
Speed, knots 17 on surface, 15 submerged
Radius, miles 13 000
Complement 60



"W" Type

Added 1966

Reported to have been transferred from the Soviet Navy in 1958.

The coastal submarine of the Soviet "MV" type was deleted from the list in 1967.

The dual purpose minelayer and training ship of the Soviet type was deleted from the list in 1967.

The old destroyer *Georgi Dimitrov* (ex-*Ognevoi*) of the Soviet "Otlichny" type was deleted from the list in 1967.

MEDIUM ESCORTS

2 "Riga" Type

DRUZKI
Displacement, tons 950 standard; 1 200 full load
Length, feet (metres) 295.3 (90) oa
Beam, feet (metres) 31.5 (9.6)
Draught, feet (metres) 10.2 (3.1)
Guns, AA 3—3.9 in (100 mm); 4—37 mm
Tubes 3—21 in (533 mm)
A/S weapons 4 DCT
Mines 50
Main engines Geared turbines
24 000 shp; 2 shafts
Speed, knots 27

SMELI



"Riga" Type

Added 1967

Only the above two units of the "Riga" class are reported to exist. Transferred from the Soviet Navy in 1957 and 1958, one each year.

COASTAL ESCORTS

8 "Kronstadt" Type

Displacement, tons 300 standard; 350 full load
Dimensions, feet 167 x 19.3 x 9
Guns 1—3.4 in; 2—37 mm AA; 3—20 mm AA
A/S weapons Depth charge throwers
Main engines Diesels; 2 shafts; 27 knots
Oil fuel (tons) 20
Complement 40

"Kronstadt" class submarine chasers reported to have been transferred from the USSR since 1957.

MINESWEEPERS

2 "T 43" Type

Displacement, tons 500 standard; 600 full load
Dimensions, feet 200 x 27.2 x 8.5
Guns 4—37 mm AA; 8—13 mm MG
Main engines Diesels; 2 shafts; 3,200 bhp = 18 knots
Complement 60

Three "T" class minesweepers are reported to have been transferred from the USSR in 1953, of which one was cannibalised.

INSHORE MINESWEEPERS

4 "T 301" Type

Displacement, tons 130 standard; 180 full load
Dimensions, feet 100 x 16 x 4.5
Guns 2—37 mm AA; 2—25 mm AA
Main engines Diesels; 2 shafts; 480 bhp = 10 knots
Complement 30

"T" 301 class inshore minesweepers reported to have been transferred from the USSR in 1955.

MINESWEEPING BOATS

24 Small Type

12 are reported to have been acquired in 1950 and 12 in 1956 for harbour, coastal, inshore and estuarial employment and general purpose duties.

MOTOR TORPEDO BOATS

14 "P 4" Type

Displacement, tons 50
Dimensions, feet 85.3 x 20 x 6
Guns 4—25 mm AA
Torpedoes 2
Main engines Diesels; 2 000 bhp = 42 knots

Motor torpedo boats of the "P 4" class reported to have been transferred from the USSR in 1956.

The fast patrol boats of the Soviet "PA 2" type, of which there were originally reported to have been 12, were deleted from the list in 1967.

Few of the small patrol craft of the PTC type, once numbering 30 to 50 units varying in particulars, remain in service.

LANDING CRAFT

6 LCS Type

Six support landing craft were reported to have been acquired from the USSR in 1953.

10 LCU Type

Displacement, tons 164 oa
Guns 1—37 mm AA

Ten utility landing craft are reported to have been built in Bulgaria in 1954. Based on a German Second World War design.

TRAINING VESSELS

VESELITZ (ex-*Assen*)

Displacement, tons 240
Guns 2—65 mm; 1 MG
Main engines 120 hp = 7 knots

Auxiliary sail training vessel. Launched in 1912. Refitted in 1933-34.

KAMICIA

Launched in 1898. Refitted in 1925. Speed, 10 knots. Also fitted with sails.

TUG

1 Fleet Type

A Soviet tug with an overall length of 135 feet.

BURMA

Administration
Vice-Chief of Staff, Defence Services (Navy):
Commodore Thaung Tin
Personnel
1967: 330 officers and 6,000 ratings including reserves

Diplomatic Representation
Naval, Military and Air Attaché in London:
Colonel Thein Doke
Naval, Military and Air Attaché in Washington:
Colonel Kyi Han

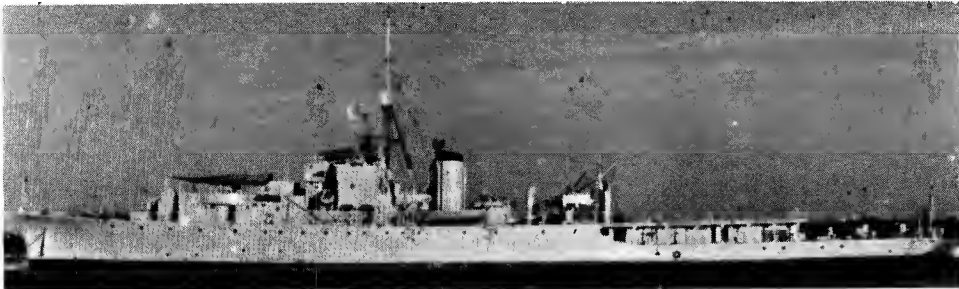
Strength of the Fleet
1 Frigate
1 Escort Minesweeper
2 Patrol Vessels
5 Motor Torpedo Boats
38 Gunboats
10 Support Ships and Service Craft

FRIGATE

Name	Builders	Laid down	Launched	Completed
MAYU (ex-HMS <i>Fal</i>)	Smiths Dock Co Ltd, South Bank-on-Tees, Middlesborough, England	20 May 1942	9 Nov 1942	2 July 1943

1 Ex-British "River" Class

Displacement, tons	1 460 standard; 2 170 full load
Length, feet (metres)	283 (86.3) pp; 301.3 (91.8) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	12 (3.7)
Guns, dual purpose	1—4 in (102 mm)
Guns, AA	4—40 mm
Boilers	2—three drum type
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	19
Oil fuel (tons)	440
Complement	140



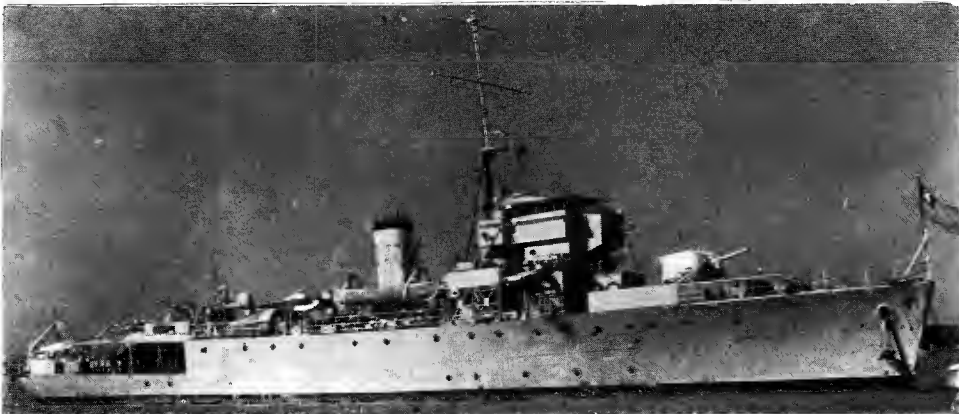
"River" class frigate. Acquired from Great Britain in 1947. MAYU Burmese Navy, Official

ESCORT MINESWEEPER

Name	Builders	Laid down	Launched	Completed
YAN MYO AUNG (ex-HMS <i>Mariner</i> , ex-Kincardine)	Port Arthur Shipyards, Canada	26 Aug 1943	9 May 1944	23 May 1945

1 Ex-British "Algerine" Class

Displacement, tons	1 040 standard; 1 335 full load
Length, feet (metres)	225 (68.6) pp; 235 (71.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	11.5 (3.5)
Guns, surface	1—4 in (102 mm)
Guns, AA	4—40 mm
Boilers	2 three-drum type
Main engines	Triple expansion
	2 000 ihp; 2 shafts
Speed, knots	16.5
Radius, miles	4 000
Complement	140



Former ocean minesweeper in the British Navy, of the corvette type and used as escort vessel. *Mariner*, M 380 was transferred from Great Britain in 1957. Handed over to Burma in London and renamed *Yan Myo Aung*, on 18 Apr 1958. Fitted for minelaying and can carry 16 mines, eight on each side.

YAN MYO AUNG 1964, Burmese Navy, Official

MOTOR TORPEDO BOATS

5 British-Built MTB/MGB Convertible Type

T 201 (ex-PTS 101)	T 203 (ex-PTS 103)	T 205 (ex-PTS 105)
T 202 (ex-PTS 102)	T 204 (ex-PTS 104)	
Displacement, tons	50 standard; 64 full load	
Dimensions, feet	67 pp; 71.5 oa x 19.5 x 6 max	
Guns	As MGB: 1—4.5 in; 1—40 mm AA; As MTB: 2—20 mm AA	
Tubes	As MTB: 4—21 in	
Main engines	2 Napier Deltic diesels; 5 000 shp = 42 knots	
Complement	13	

Interchangeable motor torpedo boats/motor gunboats built by Saunders Roe (Anglesey) Ltd, England. Convertible craft of aluminium construction, with riveted skin and aluminium alloy framework. As well as main engines, auxiliary power is also provided by diesels. The Saunders-Roe slow-speed electric drive was fitted to facilitate manoeuvring in the confined inland waters where the craft may be required to operate. Armament and layout of the vessels were similar to the British fast patrol boats of the "Dark" Class. The cost including engines, equipment and spares, of the five boats was over £1 800 000. T 201 was launched on 24 Mar 1956. All were completed in 1956-57.

A Photograph of T 201 of this class appears in the 1956-57 to 1961-62 editions.



T 202 1966, Burmese Navy, Official

SUPPORT GUNBOATS

4 Ex-British LCG (M) Type

INDAW	INLAY	INMA	INYA
Displacement, tons	381		
Dimensions, feet	154.5 oa x 22.5 x 7.8		
Guns	2—25 pdr; 2—2 pdr		
Main engines	Paxman Ricardo diesels; 2 shafts; 1 000 bhp = 13 knots		
Complement	39		

Former British LCG (M), Landing craft, gun medium. Employed as gunboats. A photograph of *Inlay* of this class appears in the 1950-51 to 1961-62 editions.



INMA Burmese Navy, Official

PATROL VESSELS

YAN TAING AUNG, PCE 41 (ex-USS *Farmington*, PCE 894)

Displacement, tons	640 standard; 903 full load
Dimensions, feet	180 wl; 184 oa x 33 x 9.5
Guns	1—3 in, 50 cal dp; 2—40 mm AA (1 twin); 8—20 mm AA (4 twin)
A/S weapons	1 hedgehog; 2 DCT; 2 DC tracks
Main engines	GM diesels, 2 shafts; 1 800 bhp = 15 knots

Former US patrol ship (escort). Built by Willamette Iron & Steel Corp, Portland, Oregon. Laid down 7 Dec 1942, launched 15 May 1943, completed 10 Aug 1964. Transferred 10 June 1965.

Patrol Vessels—continued

YAN GYI AUNG, PCE 42 (ex-USS *Creddock*, MSF 356)

Displacement, tons 650 standard; 945 full load
 Dimensions, feet 180 wl; 184.5 oa × 33 × 9.8 max
 Guns 1—3 in, 50 cal, single forward; 4—40 mm AA (2 twin);
 4—20 mm AA (2 twin)
 Main engines Diesels; 2 shafts; 1 710 shp = 14.8 knots

Former US fleet minesweeper, steel hulled, of the "Admirable" class. Built by Willamette Iron & Steel Corp, Portland, Oregon. Laid down 10 Nov 1943, launched 22 July 1944. Transferred at San Diego 31 Mar 1967.

RIVER GUNBOATS

2 Burmese-Built Large Type

NAGAKYAY

Displacement, tons 400 standard; 450 full load
 Dimensions, feet 163 × 26.8 × 5.8
 Guns 2—25 pdr OF; 2—40 mm AA
 Main engines 2 Paxman-Ricardo turbo-charged diesels; 2 shafts;
 1 160 bhp = 12 knots
 Complement 43

Built at the Government Dockyard, Dawbon, Rangoon, Burma, *Nagakyay* was completed on 3 Dec 1960 and *Nawarat* on 26 Apr 1960.



NAGAKYAY

1962, Burmese Navy, Official

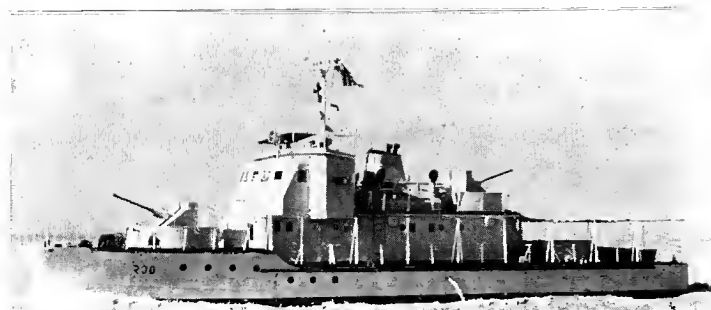
NAWARAT

10 Yugoslavian-Built "Y" Type

Y 301 Y 302 Y 303 Y 304 Y 305 Y 306 Y 307 Y 308 Y 309 Y 310

Displacement, tons 120
 Dimensions, feet 100 pp; 104.8 oa × 24 × 3
 Guns 1—40 mm AA; 1—2 pdr
 Main engines 2 Mercedes-Benz diesels; 2 shafts; 1 000 bhp = 13 knots
 Complement 29

All ten of these boats were completed in 1958 at the Shipyard "Uljanik", Pula, in Yugoslavia. For detailed building dates see 1966-67 and earlier editions. A photograph of Y 301 appears in the 1962-63 and 1963-64 editions.



Y 310

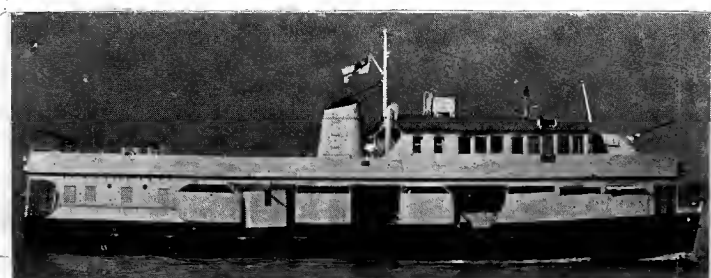
1964, Burmese Navy, Official

9 Converted Transport Type

HINTHA
SABANSAGU
SEINDASETKAYA
SETYAHATSHWEPAZUN
SHWETHIDA
SINMIN

Displacement, tons 98
 Dimensions, feet 94.5 × 22 × 4.5
 Guns 6—20 mm AA
 Main engines Crossley ERL—6 diesel; 160 bhp = 12 knots
 Complement 32

A photograph of *Shwepazun* appears in the 1952-53 to 1963-64 editions, and of *Saban* in the 1962-63 and 1963-64 editions.



SAGU

1964, Burmese Navy, Official

PATROL GUNBOATS

6 U.S.-Built PGM Type

PGM 401 PGM 402 PGM 403 PGM 404 PGM 405 PGM 406

Displacement, tons 100
 Dimensions, feet 95 × 19 × 5
 Guns 1—40 mm AA; 2—0.5 US Browning MG
 Main engines 4 GM diesels; 2 shafts; 1 000 bhp = 16 knots
 Complement 17

Built by the Marinette Marine Corporation, USA. Machinery comprises 2-stroke, 6-cylinder, tandem geared twin diesel propulsion unit—1 LH and 1 RH, 500 bhp per unit.



PGM 401

1962, Burmese Navy, Official

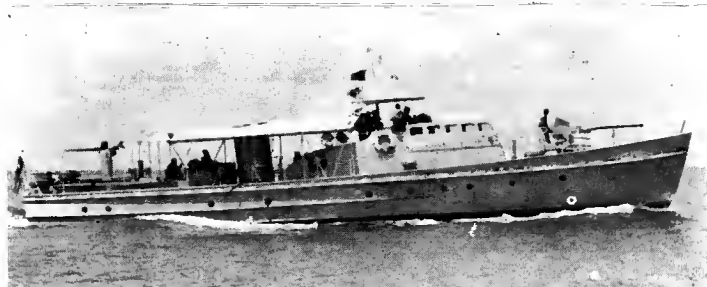
MOTOR GUNBOATS

7 Ex-United States C.G.C. Type

MGB 101 MGB 102 MGB 104 MGB 105 MGB 106 MGB 108 MGB 110

Displacement, tons 49 standard; 66 full load
 Dimensions, feet 78 pp, 83 oa × 16 × 5.5
 Guns 1—40 mm AA; 1—20 mm AA
 Main engines 4 GM diesels; 2 shafts; 800 bhp = 11 knots
 Complement 16

Ex-USCG 83-ft type cutters with new hulls built in Burma. Completed in 1960. For detailed building dates see 1966-67 and earlier editions. Machinery comprises 2-stroke, 6 cylinder, tandem geared, twin diesel propulsion units—1 LH and 1 RH drive; 400 bhp per unit.



MGB 102

1962, Burmese Navy, Official

TRANSPORT

PYIDAWAYE

Measurement, tons 2 217.31 gross
 Dimensions, feet 270 × 47 × 15
 Main engines Fleming & Ferguson triple expansion 2 000 ihp
 Boilers 2 Scotch (return type)
 Radius, miles 2 000
 Complement 88

Former passenger ship. In service since 1962. Wears the Burmese naval ensign.



PYIDAWAYE

1964, Burmese Navy, Official

LCU 1626 (ex-USS *LCU 1626*)

Displacement, tons 200 light; 342 full load
 Dimensions, feet 135.2 oa × 29 × 5.5
 Main engines Diesels; 2 shafts; 1 000 bhp = 11 knots

Former United States Navy utility landing craft. Transferred under the Military Aid Programme in 1967. Used as a transport.

LCM 701 LCM 702 LCM 703 LCM 704 LCM 705 LCM 707
LCM 706 LCM 708

Displacement, tons 28
 Dimensions, feet 56 × 14 × 4
 Main engines 2 Gray Marine diesels; 225 bhp

US-built LCM type landing craft. Used as local transports for stores and personnel.

CAMBODIA

Marine Royal Khmere

The Marine Royal Khmere was established on 20th April, 1954.

Personnel

1967: Navy: 1,350 officers and men. Marine Corps: 150 officers and men.

PATROL VESSELS

2 Ex-U.S. PC Type

E 311 (ex-Flamberge, P 631, ex-PC 1086) E 312 (ex-L'Inconstant, P 636, ex-PC 1171)

Displacement, tons	325 standard; 400 full load
Dimensions, feet	170 wl; 173.7 oa x 23 x 6.5
Guns	1—3 in dp; 1—40 mm AA; 5—20 mm AA
Main engines	2 GM diesels; 2 shafts; 3 600 bhp = 18 knots
Oil fuel (tons)	62
Radius, miles	6 000 at 10 knots
Complement	63

Former American submarine chasers of the PC type. Transferred from the United States Navy to the French Navy in 1951 and served in Indo-China; and again transferred to the Marine Royale Khmere in 1955-56. Built of steel.



E 312

Official

SUPPORT GUNBOAT

1 Ex-U.S. LSIL Type

P 111 (ex-LSIL 9039, ex-LSIL 875)

Displacement, tons	230 standard; 387 full load
Dimensions, feet	169 x 23.7 x 5.7
Guns	1—3 in; 1—40 mm AA; 2—20 mm AA
Main engines	2 GM diesels; 2 shafts; 1 000 bhp = 15 knots
Oil fuel (tons)	100
Radius, miles	8 000 at 12 knots
Complement	58

Former American infantry landing ship of the LSIL type. Transferred from the United States Navy to the French Navy, on 2 Mar 1951 and stationed in Indo-China; and again transferred to the Marine Royal Khmere in 1957.

TORPEDO BOATS

2 Ex-Yugoslav 108 Type

Displacement, tons	55 standard; 60 full load
Dimensions, feet	69 pp; 78 oa x 21.3 x 7.8
Guns	1—40 mm AA; 4—12.7 mm MG
Tubes	2
Main engines	3 Packard petrol motors; 5 000 bhp = 36 knots
Complement	14

Two torpedo boats are reported to have been presented by Yugoslavia in 1965.

PATROL BOATS

1 Ex-U.S. PGM Type

'PGM 70

Displacement, tons	100
Dimensions, feet	95 x 19 x 5.2
Guns	1—40 mm AA
Main engines	GM diesels; 2 shafts; 1 000 bhp = 16 knots
Complement	17

Motor gunboat built in USA. Transferred under the Military Aid Program in 1964.

3 Ex-HDML Type

ex-VP 748 (ex-HDML 1223)
ex-VP 749 (ex-HDML 1229)

ex-VP 762 (ex-VP 42)
(ex-HDML 1457)

Displacement, tons	46 standard; 54 full load
Dimensions, feet	72 oa x 16 x 5.5
Guns	2—20 mm AA; 4—7.5 mm MG
Main engines	2 diesels; 2 shafts; 300 bhp = 10 knots
Oil fuel (tons)	6
Radius, miles	2 200 at 10 knots
Complement	8

Former British harbour defence motor launches of the HDML type. Transferred from the British Navy to the French Navy in 1944 (VP 762) and 1950 (VP 748 and VP 749); and again transferred from the French Navy to the Marine Royale Khmere in 1956 (VP 748) and later (other two).

LANDING CRAFT

2 Ex-U.S. LCT(6) Type

ex-LCT 9085 (ex-622)

ex-LCT 9091 (ex-720)

Displacement, tons	160 standard; 320 full load
Dimensions, feet	105 wl; 119 oa x 32.7 x 5
Guns	1—40 mm AA; 4—20 mm AA
Main engines	Gray diesels; 3 shafts; 675 bhp = 8 knots
Oil fuel (tons)	11
Radius, miles	700 at 7 knots
Complement	13

Former American tank landing craft of the LCT (6) type. Transferred from the United States Navy to the French Navy for service in Indo-China and again transferred from the French Navy to the Marine Royale Khmere in 1956-57.



LCT Type

Ex-French Navy

4 Ex-U.S. LCU Type

HQ 534 (ex-LCU 9089, ex-USS LCU)
ex-LCU 9073 (ex-USS LCU 1420)

T 914 (ex-USS LCU 783)
T 915 (ex-USS LCU 1421)

Displacement, tons	180 standard; 360 full load
Dimensions, feet	115 wl; 119 oa x 34 x 6
Guns	2—20 mm AA
Main engines	3 diesels; 3 shafts; 675 bhp = 8 knots
Oil fuel (tons)	12
Radius, miles	750 at 7 knots
Complement	12

Former United States utility landing craft of the LCU type. LCU 9098 and LCU 1420 were transferred from the US Navy to the French Navy for service in Indo-China; and again transferred from the French Navy to the Marine Royale Khmere in 1954-56. LCU 783 and LCU 1421 were transferred on 31 May 1962. There are 7 landing craft (LCM), 39 armoured craft (LCVP), 2 patrol boats (YP) and 6 auxiliaries (YAG). There are also Pelican, R 912 (ex-USS YTL 555) and Pinquouie, R 911 (ex-USS YTL 556) transferred on 15 Sep 1956 by the French.

CAMEROON

Complete independence was proclaimed on 1 Jan 1960.

PATROL BOATS

VIGILANTE (ex-VC 6, P 756)

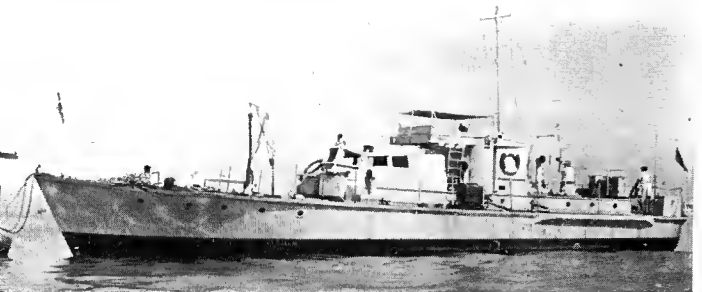
Displacement, tons	75 standard; 82 full load
Dimensions, feet	104.2 x 15.5 x 5.5
Guns	2—20 mm AA
Main engines	Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots
Radius, miles	1 500 at 15 knots
Complement	15

Former French seaward defence motor launch of the VC type. Built by Constructions Mécaniques de Normandie, Cherbourg. Completed in 1958. Transferred from France to the Republic of Cameroon on 7 Mar 1964 (officially handed over).

PATRIE DU CAMEROUN (ex-VP 768, ex-HDML 1228)

Displacement, tons	40 standard; 52 full load
Dimensions, feet	71 x 15.2 x 6
Guns	2—20 mm AA; 4 MG
Main engines	2 diesels; 2 shafts; 300 bhp = 12 knots
Radius, miles	2 200 at 10 knots
Oil fuel (tons)	6.2
Complement	11

Former British harbour defence motor launch of the HDML type. Launched in 1943. Transferred from the British Navy to the French Navy in 1950 for service in Indo-China; and again transferred from the French Navy to the Cameroon Government in 1963 to replace the ex-VP 747, ex-HDML 1423.



HDML type

Ex-French Navy

CANADA

Administration

Minister of National Defence:

The Hon. Paul T. Hellyer, PC, MP

Associate Minister of National Defence:

The Hon. Leo Cadieux, MP

On 1 Aug 1964 the Naval Board was dissolved, and Naval Headquarters, were jointly designated Canadian Forces Headquarters. The title Royal Canadian Navy is dropped and Canadian Armed Forces adopted. Of the five commands comprising the Canadian Armed Forces the Navy is the integral part of Maritime Command with supporting squadrons of Maritime Patrol aircraft.

The Senior Naval Member of the new integrated Defence Staff is:—

Controller General:

Vice-Admiral R. L. Hennessy, DSC, CD

Senior Naval Appointments

Deputy Chief Technical Services, Logistics:

Vice-Admiral H. G. Burchell, CD

Deputy Chief Plans:

Rear-Admiral R. W. Murdock, CD

Commander Maritime Command, Atlantic:

Rear-Admiral J. C. O'Brien, CD

Commander Maritime Command, Pacific:

Rear-Admiral J. A. Charles, CD

Commander Canadian Defence Liaison Staff, Washington:

Rear-Admiral S. E. Paddon, CD

Secretary Defence Staff:

Commodore F. B. Caldwell, CD

Diplomatic Representation

Senior Naval Liaison Officer, London:

Captain G. H. Hayes, DSC, CD

Senior Naval Liaison Officer, Washington:

Captain E. P. Earnshaw, CD

Navy Estimates

\$	\$
1954-55: 337,281,000	1961-62: 279,900,000
1955-56: 326,318,000	1962-63: 287,466,000
1956-57: 330,200,000	1963-64: 306,184,000
1957-58: 309,040,000	1964-65: 272,892,000
1958-59: 280,500,000	1965-66: 292,565,000
1959-60: 287,500,000	1966-67: 295,000,000
1960-61: 271,300,000	1967-68: 300,000,000

History

The Royal Canadian Navy officially came into being on 4 May 1910, when Royal Assent was given to the Naval Service Act.

Ships of the Royal Canadian Navy served in three wars. During the First World War the Canadian naval strength was 9,600 officers and men and 100 ships. During the Second World War the RCN expanded to 95,000 officers, men and wrens, and 392 ships, Canada's major naval effort being devoted to the Battle of the Atlantic. Canadian destroyers served in the Far East throughout the Korean War.

Personnel

The strength in 1967 was 19,000 comprising 2,600 officers, 15,600 men and wrens, 200 apprentices, and 600 officer cadets.

Flag

On 15 Feb 1965 a new Canadian flag replaced the Red, White and Blue ensigns:—

Official description: A red flag of the proportions two by length and one by width, containing in its centre a white square the width of the flag, with a single red maple leaf centred therein.

Strength of the Fleet

- 1 Aircraft Carrier
- 4 Submarines (Diesel Powered)
- 23 Destroyer Escorts
- 2 Ocean Escorts (Frigates)
- 1 Operational Support Ship
- 2 Escort Maintenance Ships
- 6 Coastal Minesweepers
- 3 Patrol Craft (Submarine Chasers)
- 6 Oceanographic Research Vessels
- 1 Anti-Submarine Hydrofoil
- 5 Gate Vessels (Boom Defence)
- 40 Auxiliaries and Service Craft

Ships

Canadian naval ships carry a maple leaf on the funnel (or after funnel). The senior ship of a squadron wears a command broad pennant. This is a swallow-tailed pennant, white, with blue borders top and bottom, and bearing the squadron number in blue, "Barber pole" stripes are painted on the lower structure of the foremast of ships of the Fifth Canadian Escort Squadron, in the tradition of the "Barber Pole Brigade", mid-ocean escort group of the Second World War.

With the proclamation of the new national flag on 15 Feb 1965 Canadian ships no longer wear the Red, White or Blue Ensigns, the new maple leaf flag fulfilling the functions of jack, ensign and national flag.

Mercantile Marine

Lloyd's Register of Shipping:

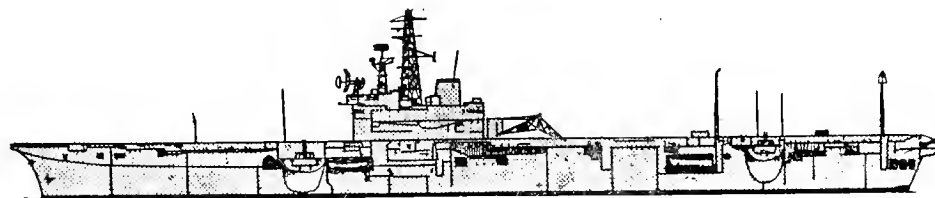
Sea: 899 vessels of 704,682 tons gross

Great Lakes: 289 vessels of 1,420,742 tons gross

Total 1,188 vessels of 2,125,424 tons gross

Silhouettes

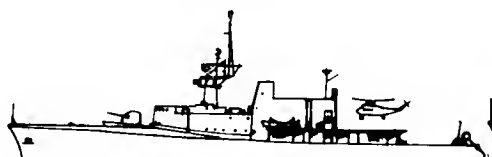
Scale: 150 feet = 1 inch



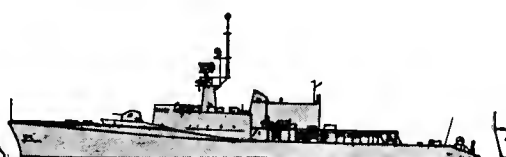
BONAVENTURE



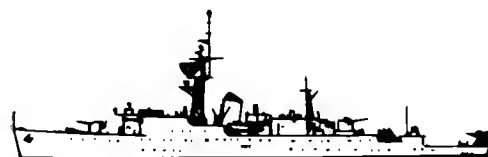
ALGONQUIN



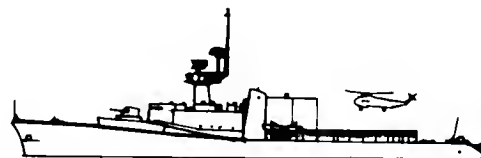
ANNAPOLIS Class



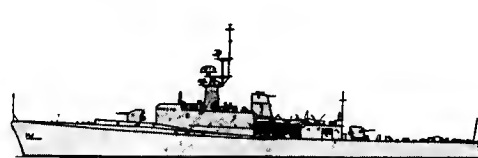
St. LAURENT (mainmast)



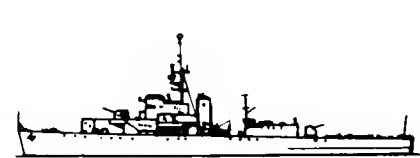
CRESCENT



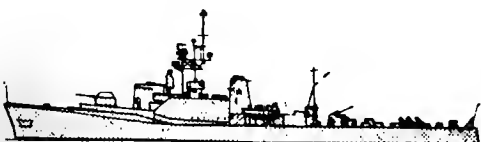
Converted St. LAURENT Class



Original St. LAURENT Class



PRESTONIAN Class (midship deckhouse)



RESTIGOUCHE Class



ATHABASKAN



PRESTONIAN Class (no deckhouse)

AIRCRAFT CARRIER (CVL)

Name	No.	Builder	Laid down	Launched	Completed
BONAVENTURE (ex-Powerful)	CVL 22	Harland & Wolff, Ltd, Belfast	27 Nov 1943	27 Feb 1945	17 Jan 1957

1 Modified "Majestic" Class

Displacement, tons	16 000 standard ; 20 000 full load
Length, feet (metres)	630 (192 0) pp, 704 (214 6) oa
Beam, feet (metres)	80 (24 4) hull
Width, feet (metres)	112 5 (34 3) ; 128 (39 0) including angled deck and sponsons
Draught, feet (metres)	25 (7 6)
Aircraft	21 capacity CS2F-2 Tracker aircraft; Sikorsky HO4-S-3 helicopters being replaced by CHSS-2 "Sea King" helicopters (one Sikorsky retained as plane guard)
Guns, dual purpose	4—3 in (76 mm) ; 2 twin mounts (4 twin mounts until 1967)
Guns, saluting	4—6 pdr.
Boilers	4 Admiralty 3-drum type, pressure 350 psi (175 kg/cm ²)
Main engines	Parsons single-reduction geared turbines
Speed, knots	40 000 shp ; 2 shafts
Complement	24 5 designed
	1 370 (war)

First aircraft carrier owned by the Royal Canadian Navy. Air recognition number 22 painted on flight deck. The type designator and hull number CVL 22 follows the NATO code and signifies a small ASW aircraft carrier.

CONSTRUCTION. The former British *Powerful* was suspended in May 1946, but purchased by Canada and construction was resumed in July 1952, when she was re-named *Bonaventure*. She was fitted with the British steam catapult and angled deck redesigned to handle jet aircraft, plans being revised to provide for a modern aircraft carrier. the modification included strengthening the flight deck and elevators and improving arrestor gear.

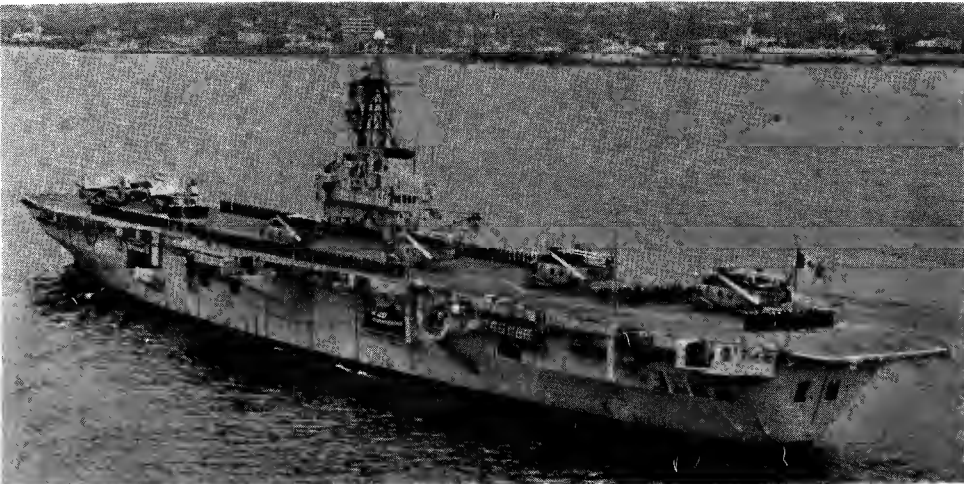
MODERNISATION. Under the Five-Year Equipment Programme announced on 22 Dec 1964 a major refit of *Bonaventure* was scheduled for 1966-67, new radars, arrangement of fighting and living spaces, new radars, and improved support facilities for the CHSS2 helicopters.

PHOTOGRAPHS. Starboard bow view in the 1957-58 edition. Starboard broadside and port bow views in the 1958-59 edition. Starboard quarter oblique aerial view, showing angled deck, in the 1958-59 to 1960-61 editions. Dead overhead aerial plan view showing flight deck in the 1957-58 to 1962-63 editions. Port broadside surface view in the 1959-60 to 1963-64 editions. Port bow oblique aerial view in the 1961-62 to 1965-66 editions. Starboard broadside aerial view in the 1963-64 to 1965-66 editions.

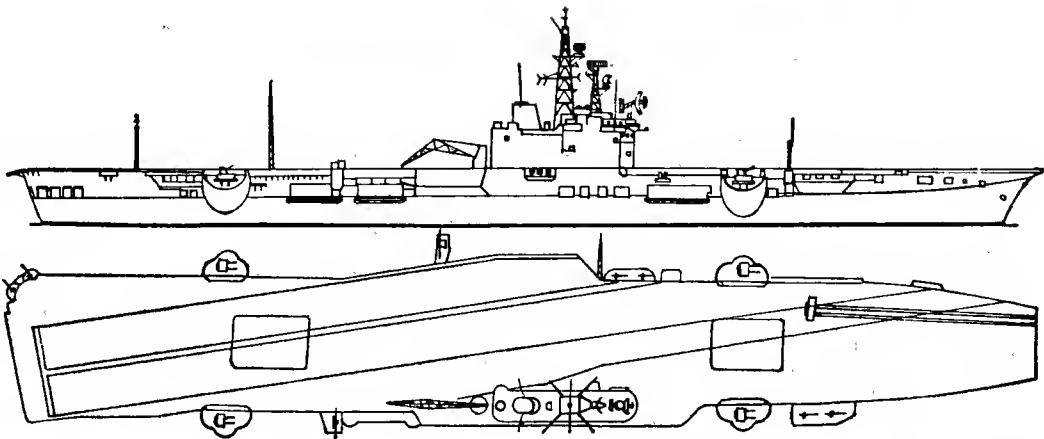
DRAWING. Starboard elevation and plan. Redrawn in 1959. Scale: 128 feet = 1 inch.



BONAVENTURE 1966, Royal Canadian Navy, Official



BONAVENTURE 1966, Royal Canadian Navy, Official



BONAVENTURE Added, 1964, Royal Canadian Navy, Official

SUBMARINES (SS)

3 British-Built "O" Type

Name	No.	Builders	Laid down	Launched	Commissioned
OJIBWA (ex-Onyx)	72	HM Dockyard, Chatham	27 Sep 1962	29 Feb 1964	23 Sep 1965
OKANAGAN	74	HM Dockyard, Chatham	25 Mar 1965	17 Sep 1966	
ONONDAGA	73	HM Dockyard, Chatham	18 June 1964	25 Sep 1965	22 June 1967

Displacement, tons 1 610 standard; 2 030 surface; 2 410 submerged
Length, feet (metres) 241 (73.5) pp; 294.2 (90.0) oa
Beam, feet (metres) 26.5 (8.1)
Draught, feet (metres) 18 (5.5)
Torpedo tubes 8—21 in (533 mm), 6 bow and 2 stern
Main engines 2 400 hp Admiralty Standard Range diesels; 3 600 hp electric motors (submerged)
Speed, knots 12 on surface; 16 submerged
Complement 65 (7 officers, 58 ratings)

The procurement of three submarines for the Royal Canadian Navy was announced by the Minister of National Defence on 11 Apr 1962, all of the "Oberon" class built in Great Britain. The first of these patrol submarines was obtained by the Canadian Government from the Royal Navy construction programme. She was laid down as *Onyx* but launched as *Ojibwa*. Two submarines of the same class are being built for commissioning in 1967 and 1968. There are some design changes to meet specific new requirements including installation of RCN communications equipment and enlargement of de-icing and air-conditioning systems to meet the wide extremes of climate encountered in Canadian operating areas.

NOMENCLATURE. The name *Ojibwa* is that of a tribe of North American Indians now widely dispersed in Canada and the USA and one of the largest remnants of aboriginal population. *Okanagan* and *Onondaga* are also well known Canadian Indian tribes.



OJIBWA

1966, Royal Canadian Navy, Official

1 Ex-U.S. "Balao" Class

Name	No.	Builders	Launched	Completed
GRILSE (ex-USS <i>Burrfish</i> , SSR 312)	SS 71	Electric Boat Co, Groton	18 June 1943	14 Sep 1943

Displacement, tons 1 526 standard; 1 816 surface; 2 425 submerged
Length, feet (metres) 311.5 (95.0)
Beam, feet (metres) 27 (8.2)
Draught, feet (metres) 17 (5.2)
Torpedo tubes 6—21 in (533 mm)
Main engines 6 500 hp diesels (surface) 4 610 hp electric motors (submerged)
Speed, knots 20 on surface; 10 submerged
Radius, miles 12 000 at 10 knots
Oil fuel (tons) 300
Complement 79 (7 officers, 72 men) with additional accommodation for 2 officers, 9 men

Former United States submarine of the converted "Balao" class. Loaned to the Royal Canadian Navy for five years, but this initial period which expired in May 1966 was extended for an indefinite period of from two to five years. Commissioned as HMCS *Grilse* at New London, Connecticut, on 11 May 1961. Based at Esquimalt, BC to carry out anti-submarine warfare training duties with aircraft and ships of the Pacific Maritime Command. Antennae and equipment associated with her former radar picket duties and the 40 mm anti-aircraft gun, before the conning tower were removed.



1966, Royal Canadian Navy, Official

FUTURE PROGRAMME. An official announcement on 22 Dec 1964 stated: Towards the end of the five year programme it is planned to acquire a conventionally powered submarine to replace HMCS *Grilse*, the ASW training submarine on loan from the USA and based on the west coast.

ROYAL NAVY DIVISION. The British Sixth Submarine Division officially ceased to exist in Apr 1966 and was replaced by the First Canadian Submarine Squadron. The last Royal Navy submarine to serve with the British Sixth Submarine Division was withdrawn in June 1967.

PHOTOGRAPHS. A photograph of *Grilse* (as USS *Burrfish*, before refit and transfer to the Royal Canadian Navy) appears in the 1962-63 edition.

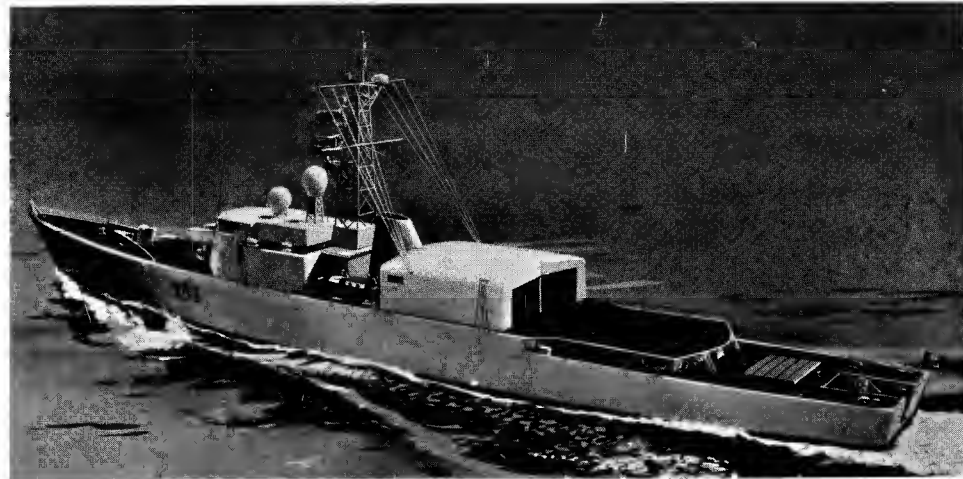
DESTROYER HELICOPTER CARRIERS (DDH)

4 Projected Anti-Submarine Type

(DDH-280)

Displacement, tons 3 800 full load
Length, feet (metres) 398 (121.3)
Beam, feet (metres) 48 (14.6)
Draught, feet (metres) 14 (4.3)
Aircraft 2 "Sea King" CHSS-2 A/S helicopters
Guns, dual purpose 1—5 in (127 mm) LA, single D.M.
A/S 1 Limbo three-barrelled mortar
Torpedo tubes 2 twin for A/S homing torpedoes
Main engines 2 gas turbines; 30 000 shp;
2 shafts
Speed, knots 27 designed
Radius, miles 4 500 at economical speed

It will be observed that these ships have the same hull design, dimensions and basic characteristics as the large general purpose frigates cancelled at the end of 1963 (see particulars and illustration in the 1963-64 edition). Designed as anti-submarine ships, they will be fitted as leaders, with variable depth and conventional sonar, landing deck equipped with double hauldown and bear-trap, Flume type anti-rolling tanks to stabilise the ships at low speed, pre-wetting system to counter radio-active fallout, enclosed citadel, and bridge control of machinery, which will comprise gas turbines, instead of the steam originally projected. Provision has been made for the future fitting of a short range anti-aircraft missile.



DDH 280 (Modified Model)

1967, Royal Canadian Navy, Official

DESTROYER ESCORTS (DDH and DDE) Anti-Submarine Frigate Type

2 "Annapolis" Class

ANNAPOLIS

NIPIGON

4 "Mackenzie" Class

MACKENZIE
QU'APPELLE

SASKATCHEWAN
YUKON

7 "Restigouche" Class

CHAUDIERE
COLOMBIA

GATINEAU
KOOTENAY

RESTIGOUCHE
ST. CROIX
TERRA NOVA

Name	No.	Builders	Laid down	Launched	Completed
Chaudiere	235	Halifax Shipyards Ltd, Halifax	30 July 1953	13 Nov 1957	14 Nov 1959
Gatineau	236	Davie Shipbuilding & Repairing	30 Apr 1953	3 June 1957	17 Feb 1959
St. Croix	256	Marine Industries Ltd, Sorel, Q	15 Oct 1954	17 Nov 1957	4 Oct 1958
Restigouche	257	Canadian Vickers Ltd, Montreal	15 July 1953	22 Nov 1954	7 June 1958
Kootenay	258	Burrard D.D. & Shipbuilding	21 Aug 1952	15 June 1954	7 Mar 1959
Terra Nova	259	Victoria Machinery Depot Co	14 Nov 1952	21 June 1955	6 June 1959
Columbia	260	Burrard D.D. & Shipbuilding	11 June 1953	1 Nov 1956	7 Nov 1959
Mackenzie	261	Canadian Vickers Ltd, Montreal	15 Dec 1958	25 May 1961	6 Oct 1962
*Saskatchewan	262	Victoria Machinery (and Yarrow)	July 1959	1 Feb 1961	16 Feb 1963
Yukon	263	Burrard D.D. & Shipbuilding	Oct 1959	27 July 1961	25 May 1963
Qu'Appelle	264	Davie Shipbuilding & Repairing	Jan 1960	2 May 1962	14 Sep 1963
Annapolis	265	Halifax Shipyards Ltd, Halifax	July 1960	27 Apr 1963	19 Dec 1964
Nipigon	266	Marine Industries Ltd, Sorel, Q	Apr 1960	10 Dec 1961	30 May 1964

*Saskatchewan was launched by Victoria Machinery Depot Co Ltd, but Completed by Yarrow's Ltd.

Displacement, tons	2 366 standard; 2 900 full load
Length, feet (metres)	366 (111.5) oa
Beam, feet (metres)	42 (12.8)
Draught, feet (metres)	13.5 (4.1)
Guns, AA	2—3 in (76 mm) 70 cal. forward (twin); 2—3 in (76 mm) 50 cal. aft (twin); Qu'Appelle has 50 cal. fore and aft; Annapolis and Nipigon 3 in 70 cal forward only
A/S weapons	2 Limbo 3-barrelled depth charge mortars in after well. 1 Limbo in Annapolis and Nipigon
Boilers	2 water tube
Main engines	Geared turbines
	30 000 shp; 2 shafts
Speed, knots	28 (official figure)
Complement	246 (12 officers, 234 ratings)

These ships were developed from the original "St. Laurent" class, but there are considerable differences in the three classes. Ships fitted with helicopter hangar and landing platform are now designated DDH.

CLASS VARIATION. In providing helicopter platforms and hangars in *Annapolis* and *Nipigon*, which also incorporate variable depth sonar and cutaway stern (see photo) it was possible to mount only one Limbo and one twin 3 inch, 50 cal gun.

DESIGN IMPROVEMENT. New features of the "Mackenzie" class include improved habitability; vinyl-asbestos tile deck covering throughout the ship; improved air-conditioning; extension of pre-wetting system (to counter radioactive fallout) to cover entire exposed area of the ship; "Dutch," water-tight doors heated wipers for bridge windows to cope with temperature in northern waters.

CONVERSION. The "Restigouche" class is being converted to carry variable depth sonar, advanced electronics equipment and, eventually, Asroc. *Terra Nova* was the first to be taken in hand in Mar 1966. Conversion will increase the overall length to 371 feet.

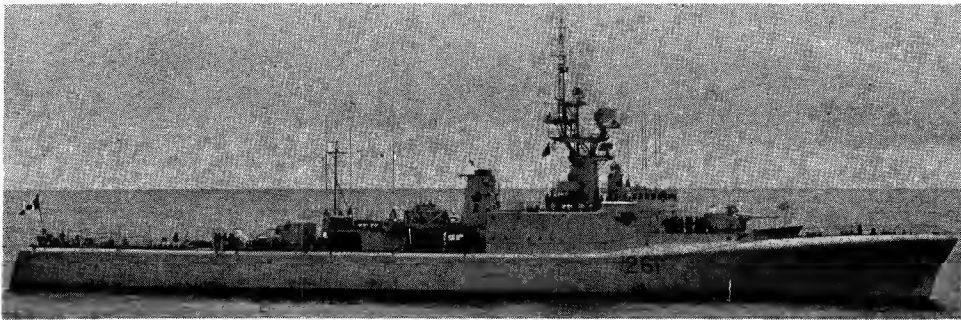
CONSTRUCTION. On the prefabrication unit system ships were under construction for months before anything appeared on the ways, so it is impossible to give a true "laid down" date. The work "commencement" schedule for the "Mackenzie"/"Annapolis" group is shown in the table.

PHOTOGRAPHS. Starboard broadside view of *Restigouche* in the 1958-59 edition. Starboard bow oblique aerial view of *Terra Nova* and port quarter surface view of *Columbia* in the 1960-61 to 1962-63 editions. Port broadside aerial view of *Kootenay* in the 1959-60 to 1962-63 editions. Starboard broadside aerial view of *Saskatchewan* in the 1963-64 edition. Port quarter oblique aerial view of *Mackenzie* and port broadside surface view of *Gatineau* in the 1963-64 and 1964-65 editions. Port broadside view of *Yukon* in the 1964-65 and 1965-66 editions.



NIPIGON (showing variable depth sonar, cutaway stern, helicopter platform, and hangar)

1965, Royal Canadian Navy, Official



MACKENZIE

1966, Royal Canadian Navy, Official



ANNAPOLIS

1965, Royal Canadian Navy, Official

Destroyer Escorts (DDH ex-DDE) Anti-Submarine Frigate Type—continued

7 "St. Laurent" Class

Displacement, tons	2 263 standard ; 2 800 full load
Length, feet (metres)	366 (111.5) oa
Beam, feet (metres)	42 (12.8)
Draught, feet (metres)	13.2 (4.0)
Guns, AA	2—3 in (76 mm) 50 cal, twin
A/S weapons	2 Limbo 3-barrelled depth charge mortars in after well
Boilers	2 water tube
Main engines	Geared turbines
Speed, knots	30 000 shp ; 2 shafts
Complement	28.5 (official figure)
	250 (13 officers, 237 ratings)

Officially classed as major warships and as such were the first to be designed completely in Canada. These anti-submarine escort vessels of a high-speed type were built primarily for the detection and destruction of modern fast submarines. In evolving their design much assistance was received from the Royal Navy and the United States Navy. In function the vessels supersede the frigates of the Second World War and like the latter their design was worked out so that in the event of emergency they could be produced rapidly and in quantity. In speed, manoeuvrability and weapons the ships fulfil all the requirements of their class for modern sea warfare. The design provided for flush deck, low bridge, considerable use of aluminium instead of steel for the superstructure, fittings and furniture, and compartmented hull. The ships have long range sonar to probe for submarines and improved armament and electronic equipment as submarine chasers.

RECONSTRUCTION. All seven ships of the "St. Laurent" class have been fitted with helicopter platforms and VDS. *St. Laurent* was equipped with VDS late in 1961, and platform added later. Twin funnels were stepped to permit the forward extension of the helicopter hangar. Gunhouses are of fibreglass. In providing helicopter platforms and hangars in the converted "St. Laurent" class ships it was possible to retain only one three barrelled Limbo mount and only one twin 3-inch 50 cal gun mount. Dates of recommissioning after conversion:—*Assiniboine* 28 June 1963, *St. Laurent* 4 Oct 1963, *Ottawa* 21 Oct 1964, *Saguenay* 14 May 1965, *Skeena* 15 Aug 1965, *Margaree* 15 Oct 1965, *Fraser* 31 Aug 1966.

Name	No.	Builders	Laid down	Launched	Completed
ST. LAURENT	DDE 205	Canadian Vickers, Ltd, Montreal	22 Nov 1950	20 Nov 1951	29 Oct 1955
SAGUENAY	DDE 206	Halifax Shipyards, Ltd, Halifax	4 Apr 1951	30 July 1953	15 Dec 1956
SKEENA	DDE 207	Burrard Dry Dock & Shipbuilding	1 June 1951	19 Aug 1952	30 Mar 1957
OTTAWA	DDE 229	Canadian Vickers, Ltd, Montreal	8 June 1951	29 Apr 1953	10 Nov 1956
MARGAREE	DDE 230	Halifax Shipyards Ltd, Halifax	12 Sep 1951	29 Mar 1956	5 Oct 1957
*FRASER	DDE 233	Yarrows, Ltd, Esquimalt, B.C.	11 Dec 1951	19 Feb 1953	28 June 1957
ASSINIBOINE	DDE 234	Marine Industries Ltd, Sorel, Q	19 May 1952	12 Feb 1954	16 Aug 1956

* Fraser was launched by Burrard Dry Dock & Shipbuilding, but completed by Yarrows Ltd.



SAGUENAY (after conversion)

1966, Royal Canadian Navy, Official

PHOTOGRAPHS. Starboard quarter view of *St. Laurent* and broadside view of *Ottawa* as first completed in 1957-58 edition. Starboard quarter oblique aerial view of *Ottawa* with experimental helicopter platform laid on aft, in the 1958-59 and 1959-60 editions. Port bow oblique aerial view of *Saguenay* in the 1957-58 to 1959-60 editions. Port broadside aerial view of *Margaree* in the 1958-59 to 1961-62 editions. Port broadside view of *Skeena* in the 1962-63 to 1964-65 editions. Port broadside surface view of *Assiniboine* after reconstruction in the 1963-64 edition. Starboard bow surface view of *Assiniboine* carrying helicopter in the 1964-65 edition. Port bow surface view of *Ottawa* after conversion in the 1965-66 edition.

GUNNERY. The original armament was 4—3 inch, 50 cal AA (2 twin), 2—40 mm AA (single), and 2 Limbos.

ENGINEERING. Propelling machinery is of British design. Yarrow & Co. Ltd., Scotstoun, Glasgow, supplied Canadian Vickers with a complete set of machinery for *St. Laurent*, the other ships being supplied with similar machinery manufactured in Canada. The main turbines and condensers are of English Electric design.

APPEARANCE. The converted ships of the "St. Laurent" class resemble *Annapolis* and *Nipigon* (see previous page) but there are slight variations in funnel height and rake, etc.



ASSINIBOINE (with helicopter)

1965, Royal Canadian Navy, Official



ST. LAURENT (after conversion to a revised design)

1964, Royal Canadian Navy, Official

Destroyer Escorts (DDE)—continued

1 "Tribal" Class

Displacement, tons	2 200 standard; 2 800 full load
Length, feet (metres)	355.5 (108.4) pp; 377 (114.9) oa
Beam, feet (metres)	37.5 (11.4)
Draught, feet (metres)	15.1 (4.6)
Guns, surface	4—4 in (102 mm); 2—3 in (76 mm)
Guns, AA	4—40 mm
A/S	2 Squid triple-barrelled mortars
Torpedo tubes	4—21 in (533 mm)
Boilers	3 Admiralty 3-drum type
Main engines	Parsons geared turbines
	44 000 shp; 2 shafts
Speed, knots	36.5 designed; 32 sea speed
Radius, miles	1 700 at 20 knots
Oil fuel (tons)	520
Complement	240

Sole survivor of eight "Tribal" class destroyers (four built in Canada at Halifax Shipyards, Ltd, Halifax, and four in Great Britain at Vickers-Armstrongs, Ltd, Tyne) seven of which (one was a war loss) were converted into anti-submarine escorts in 1953-55. *Athabaskan* was again extensively refitted in 1958.

DISPOSALS
Iroquois scrapped Bilbao, Spain, 1966. *Caxuga*, *Huron* *Micmac* *Nootka* sold to Marine Salvage Ltd, Colbourne, Ontario, for scrap. *Haida* is floating museum at Toronto (purchased for \$20 000). *Athabaskan* (first ship of the name, built in Great Britain) was Second World War loss.

Name	No.	Builders	Laid down	Launched	Completed
ATHABASKAN	DDE 219	Halifax Shipyards, Ltd, Halifax	15 May 1944	4 May 1946	20 Feb 1948



ATHABASKAN 1967, Royal Canadian Navy, Official

"Algonquin" Class ("Cr" Type)

Displacement, tons	2 100 standard; 2 700 full load
Length, feet (metres)	339.5 (103.5) pp; 362.8 (110.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	13.2 (4.0)
Guns, surface	2—4 in (102 mm) twin mount, forward; 2—3 in (76 mm) twin mount, aft (now in shield)
Guns, AA	2—40 mm Bofors
A/S	1 Limbo triple-barrelled DC mortar
	3 launchers for Mark 43 A/S homing torpedoes
Boilers	2 Admiralty 3-drum type
Main engines	Parsons geared turbines
	40 000 shp; 2 shafts
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	2 800 at 20 knots
Oil fuel (tons)	580
Complement	250

Originally a "Cr" class destroyer lent to the Royal Canadian Navy in 1945 and permanently transferred from Great Britain in 1951. Fully converted into a fast anti-submarine escort by Esquimalt Dockyard in 1956. Extensively refitted in 1958. Modified considerably in 1960 when one Limbo was removed to compensate for the weight of the variable depth sonar installed, shield fitted to 3 inch mounting, and torpedo launchers added.

Name	No.	Builders	Laid down	Launched	Completed
CRESCENT	DDE 226	John Brown & Co Ltd, Clydebank	16 Sep 1943	20 July 1944	21 Sep 1945



CRESCENT 1964, Wright & Logan

APPEARANCE. *Crescent* is generally very similar to *Algonquin* except that the main armament is mounted *vice versa*, i.e. 4 inch guns are mounted forward and the 3 inch guns in the after position.

DISPOSAL
Original sister ship *Crusader*, partially converted into a fast anti-submarine escort, was declared surplus in 1963 and turned over to the Crown Assets Disposal Corporation.

"Algonquin" Class ("V" Type)

Displacement, tons	2 100 standard; 2 700 full load
Length, feet (metres)	339.5 (103.5) pp; 362.8 (110.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	13.2 (4.0)
Guns, surface	2—4 in (102 mm) twin mount forward; 2—3 in (76 mm) twin mount
Guns, AA	2—40 mm Bofors
A/S	1 Limbo three-barrelled DC mortar
	3 launchers for Mark 43 A/S homing torpedoes
Boilers	2 Admiralty 3-drum type
Main engines	Parsons geared turbines
	40 000 shp; 2 shafts
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	2 800 at 20 knots
Oil fuel (tons)	580
Complement	230

Originally a "V" class destroyer transferred from Great Britain in 1944. Fully converted into a fast anti-submarine escort by Esquimalt Dockyard in 1954.

Name	No.	Builders	Laid down	Launched	Completed
ALGONQUIN (ex-Valentine, ex-Kempfenfelt)	DDE 224	John Brown & Co Ltd, Clydebank	8 Oct 1942	2 Sep 1943	28 Feb 1944



ALGONQUIN 1964 Wright & Logan

APPEARANCE. *Algonquin* has her 4 inch twin gun mounting aft and 3 inch twin gun mounting forward instead of *vice versa* as in *Crescent* (see above). She now has a shield to her 3 inch guns.

DISPOSAL
Original sister ship *S/ooux* (ex-HMS *Vixen*), partially converted into a fast anti-submarine escort, was paid off for disposal on 30 Oct 1963.

CLASSIFICATION. *Algonquin* and *Crescent*, although they differ, were officially designated "Destroyer Escorts—*Algonquin* Class (DDE)" in 1956.

OCEAN ESCORTS (DE)

2 "Prestonian" Class

Name	No.	Launched
BEACON HILL	DE 303	6 Nov 1943
GRANBY (ex-Victoriaville)	DE 320	23 June 1944

Displacement, tons	1 570 standard; 2 360 full load
Length, feet (metres)	301.5 (91.9) oa
Beam, feet (metres)	36.5 (11.1)
Draught, feet (metres)	16 (4.9)
Guns, surface	2-4 in (102 mm)
Guns, AA	6-40 mm
A/S	2 Squid triple barrel DC mortars
Boilers	2 Admiralty 3-drum type
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	19
Radius, miles	9 600 at 12 knots
Oil fuel (tons)	720
Complement	140

Originally of similar design to the British "River" class frigates. All built in Canadian shipyards, 21 of this class, including three transferred to Norway, were modernised and reconstructed to flush deckers (completed anti-submarine conversion in 1953-58). All were redesignated FFE (instead of PF) in 1953. Again redesignated, as DE, in 1964.

The seven frigates of the Fourth Canadian Escort Squadron, including *Beacon Hill*, were fitted with a midship deckhouse to provide classroom and messing facilities for officer cadets under sea training. The anti-submarine capabilities were not affected.

It was officially stated in 1967 that all this class have been paid off to surplus except *Beacon Hill* and *Victoria-ville* which has been renamed *Granby* and converted to a diving depot ship.

TRANSFERS. *Penetang* (ex-Rouyn), *Prestonian* (ex-*Beauharnois*), and *Toronto* (ex-Gifford) were lent to Norway in 1956, being renamed *Draug*, *Troll* and *Garm*, respectively, and transferred outright on 27 June 1958.

DISPOSALS. *Lauzon* was declared surplus in 1963. *Buckingham* *Fort Erie* and *Lanark* in 1965, *Cap de la Madeleine*, *Inch Arran*, *La Hullose* and *Outremont* in 1966, and *Antigonish*, *Jonquiere*, *New Glasgow*, *New Waterford*, *Ste. Therese*, *Stettler*, *Sussexvale* and *Swansea* in 1967.



BEACON HILL (with midship deckhouse)

1967, Royal Canadian Navy. Official



GRANBY (as *Victoriaville*, no midship deckhouse)

1967, courtesy Godfrey H. Walker, Esq

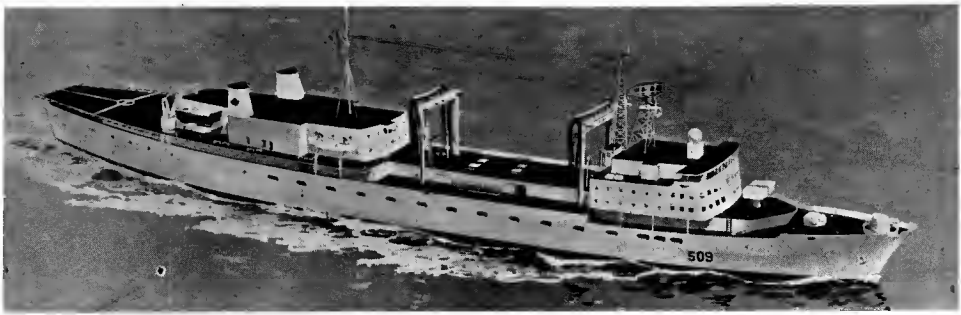
OPERATIONAL SUPPORT SHIPS (AOR)

2 New Construction

Displacement, tons	9 000 light; 24 000 full load
Measurement, tons	22 000 gross; 13 250 deadweight
Length, feet (metres)	564 (171.9) oa
Guns, AA	1-3 in (76 mm)
A/S weapons	1 Ikara launcher
Aircraft	3 helicopters
Main engines	22 000 shp
Speed, knots	20

These two new operational support ships were provided for under the Five Year Programme. Contract price \$47 500 000 for both ships. In design they will be an improvement on that of the prototype *Provider*. They are intended for employment one on each coast. They will increase the ability of the Canadian Navy's anti-submarine forces to remain continuously on station in emergency. Alternatively, they could be used to carry spare anti-submarine helicopters, military vehicles and bulk equipment if required for sealift purposes.

Name	No.	Builders	Laid down	Completion
PRESERVER	AOR 510	Saint John Dry Dock Co Ltd, Saint John, N.B.	Spring 1967	Late 1969
PROTECTEUR	AOR 509	Saint John Dry Dock Co Ltd, Saint John, N.B.	Spring 1967	Late 1969



PROTECTEUR

1967, Royal Canadian Navy. Official

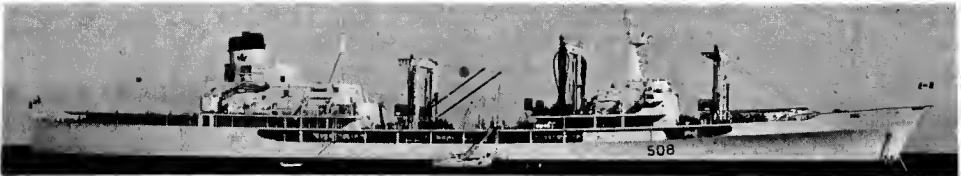
Helicopter Carrier and Supply Ship

Displacement, tons	7 300 light; 22 700 full load
Measurement, tons	20 000 gross; 14 700 deadweight
Length, feet (metres)	523 (159.4) pp; 555 (169.2) oa
Beam, feet (metres)	76 (23.2)
Draught, feet (metres)	32 (9.8) max
Aircraft	6 Sikorsky helicopters
Boilers	2 water tube
Main engines	Double reduction geared turbine
	21 000 shp; 1 shaft
Speed, knots	20
Radius, miles	5 000 at 20 knots
Oil fuel (tons)	1 200
Complement	142 (11 officers, 131 ratings)

Authorised (announced) on 15 Apr 1958. Preliminary construction work began in Sep 1960. Commissioned for service on 28 Sep 1963. Cost \$15 700 000.

NOMENCLATURE. *Provider* is the name borne during the Second World War by a RCN Fairmile motor launch parent ship. Formerly rated as Fleet Replenishment Ship, but reclassified as Operational Support Ship in 1965.

Name	No.	Builders	Laid down	Launched	Completed
PROVIDER	AOR 508	Davie Shipbuilding Ltd., Lauzon, Quebec	1 May 1961	5 July 1962	28 Sep 1963



PROVIDER

1967, courtesy Godfrey H. Walker Esq.

DESIGN. The clean, streamlined appearance of the hull follows a design to achieve high speed while fulfilling replenishments with the fleet on operations. The forward bridge structure contains the commanding officers' accommodation as well as a modern eight-berth hospital. In the superstructure also are the wheelhouse, chartroom and three positions from which there is complete control of this ship—the command control position and the two bridge wing positions. The helicopter flight deck is aft with the hangar located on this deck and immediately below the funnel. At least six Sikorsky helicopters of the type at present in service in the Royal Canadian Navy

can be accommodated in the hangar space. The flight deck is capable of receiving the largest and heaviest types of helicopter. Immediately below the flight deck are two accommodation decks for the ship's company including the main galley and combined mess-recreation spaces for chief and petty officers and men. An unusual feature of the ship is the number of winches on deck, a total of 23 of the electro-hydraulic type. These are used for ship-to-ship movement of cargo and supplies, as well as shore-to-ship requirements when alongside.

ESCORT MAINTENANCE SHIPS (ARE)

2 "Cape" Class					
Name	No.	Builders	Laid down	Launched	Completed
CAPE BRETON	100	Burnard Dry Dock Co	5 July 44	7 Oct 44	25 Apr 45
CAPE SCOTT	101	Burnard Dry Dock Co	8 June 44	27 Sep 44	20 Mar 45
Displacement, tons	8 580 standard; 11 270 full load				
Dimensions, feet	441.5 x 57 x 20 mean at standard displacement				
Main engines	Triple expansion; 1 shaft; 2 500 ihp = 11 knots				
Boilers	2 Foster Wheeler				
Complement	Cape Breton 220; Cape Scott 270 officers and men				

Cape Breton formerly served in the Royal Navy as the escort maintenance ship *Flamborough Head*; but she returned from the United Kingdom in 1951 and was in turn acquired by the Royal Canadian Navy and renamed *Cape Breton* in 1953, serving as a training establishment for technical apprentices at Halifax until 1958 when she sailed for Esquimalt for conversion to her present function. On 16 Nov 1959 she was commissioned on the West Coast as the second mobile repair ship; but she was paid off to reserve on 10 Feb 1964. A photograph of *Cape Breton* appears in the 1966-67 edition. *Cape Scott* served in the Royal Navy as the *Beachy Head* until 1947, when she was lent to Royal Netherlands Navy and renamed *Vulkaan*; but she was returned to the Royal Navy in 1950, and was acquired by the Royal Canadian Navy in 1952, being renamed *Cape Scott* in 1953. On 28 Jan 1959 *Cape Scott* was commissioned at Halifax as the Royal Canadian Navy's first mobile repair ship. Both ships are equipped with a helicopter landing platform, a decompression chamber for the ship's divers, engineering, electrical and electronic repair shops, diesel engine repair shop, battery shop, sheet metal shop, welding shop, pipe and coppersmith's shop, plate shop and blacksmith's shop. Each ship contains an eight-berth hospital, large sick bay, operating theatre, X-ray room, small medical laboratory, dental clinic and dental laboratory.



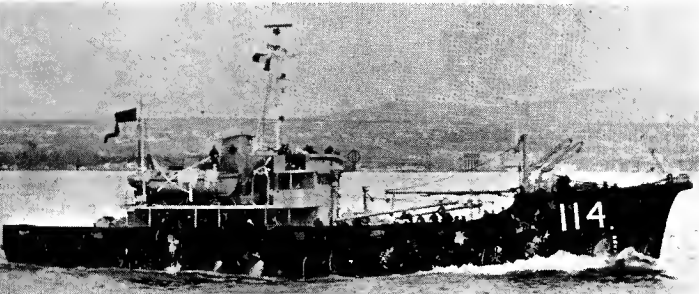
CAPE SCOTT 1967, Skyfotos

RESEARCH VESSELS (AGOR)

BLUETHROAT (AGOR 114)

Displacement, tons	785 standard; 870 full load
Dimensions, feet	150.7 pp; 157 oa x 33 x 10
Main engines	Diesel; 2 shafts; 1 200 bhp = 13 knots

Authorised under the 1951 Programme. Built by Geo. T. Davie & Sons Ltd, Lauzon P.Q. Laid down on 31 Oct 1952. Launched on 15 Sep 1955. Completed on 28 Nov 1955. Built as a Mine and Loop Layer, but under NATO standardised nomenclature listed as a Harbour Mineplanter. In 1957 she was rated as a Controlled Minelayer, No. NPC 114. Redesignated as a Cable Layer (ALC) in 1959, and as a Research Vessel (AGOR) in 1964.



BLUETHROAT 1965, Royal Canadian Navy, Official

SACKVILLE (AGOR 113)

Displacement, tons	1 085 standard; 1 350 full load
Dimensions, feet	190 pp; 205 oa x 33 x 14.5
Main engines	Triple expansion; 2 750 ihp = 16 knots
Boilers	2 SE

Built by St. John Dry Dock Co, St. John, N.B. Launched on 15 May 1941. Completed on 30 Dec 1941. "Ex-Flower" class frigate (corvette) converted to loop layer. Employed by Naval Research Laboratories for oceanographic work. Formerly designated AN 113, but rated as ALC in 1959, as a cable layer under NATO nomenclature. Redesignated as a Research Vessel (AGOR) in 1964.



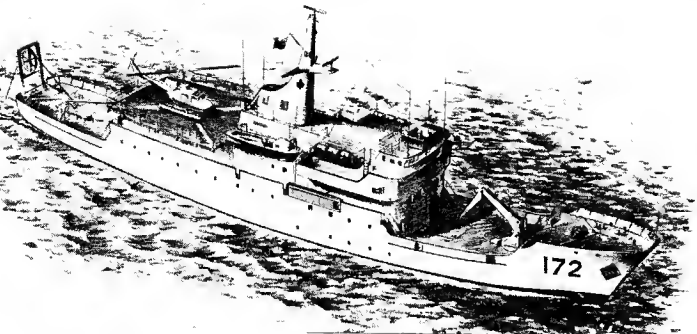
SACKVILLE 1967, Royal Canadian Navy, Official

OCEANOGRAPHIC RESEARCH VESSELS

1 New Construction

QUEST (AGOR) 172	
Displacement, tons	2 000 (official figure)
Dimensions, feet	252 oa
Aircraft	Light helicopter
Main engines	Diesel electric; 2 shafts; 3 000 shp = 16 knots max
Radius, miles	8 000 at 12 knots
Complement	50

Built for the Naval Research Establishment of the Defence Research Board for acoustic hydrographic and general oceanographic work, in particular as related to anti-submarine warfare. Will be capable of operating in heavy ice in the company of an icebreaker. Design is slightly enlarged version of *Endeavour* (see below) with similar main engines, speed and range. Construction began in 1966. To be based at Halifax.

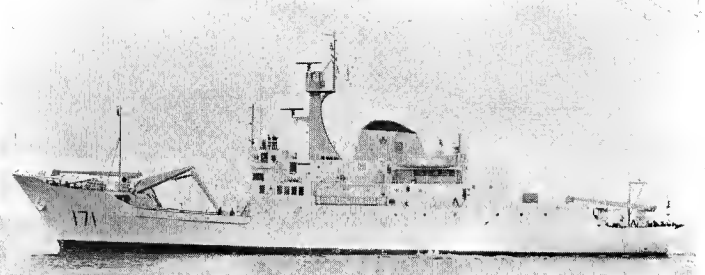


QUEST 1964, Royal Canadian Navy, Official

ENDEAVOUR (AGOR 171)

Displacement, tons	1 560 (revised official figures)
Dimensions, feet	215 wl; 236 oa x 38.5 x 13
Aircraft	1 light helicopter
Main engines	Diesel electric; 2 shafts; 2 960 shp = 16 knots
Radius, miles	10 000 at 12 knots
Complement	10 officers, 13 scientists, 25 ratings (plus helicopter pilot and engineer)

A new research ship specifically designed to meet the scientific requirements for undertaking programmes in anti-submarine research. Carries a light helicopter in a telescopic hangar. Flight deck 48 by 31 feet. Stiffened for operating in ice-covered areas. Designed by the Director General Ships and the Pacific Naval Laboratory. Built by Yarrows Ltd, Esquimalt, B.C. Contract let in Nov 1963. Accepted for service on 9 Mar 1965. She is able to turn in 2.5 times her own length. Her crow's nest is fitted with engine and steering controls for navigation in ice. A bulbous bow reduces pitch and she has anti-roll tanks. A large articulated five-ton crane is fitted forward so that the jib head can be lowered to the ocean surface and thus reduce swing on scientific instruments. Two additional 9-ton Austin-Weston telescopic cranes are fitted. There are two oceanographical winches each holding 5 000 fathoms of 5/16 in wire, two bathythermograph winches and a deep-sea anchoring and coring winch. She has acoustic insulation in her machinery spaces.



ENDEAVOUR 1965, Royal Canadian Navy, Official

FORT FRANCES (AGOR 170)

Displacement, tons	1 040 standard; 1 335 full load
Dimensions, feet	225 oa x 35 x 11 max
Main engines	Triple expansion; 2 shafts; 2 000 ihp = 16.5 knots
Boilers	2, of 3-drum type
Complement	85

Built by Port Arthur Shipbuilding Co, Port Arthur, Ontario. *Fort Frances* was launched on 30 Oct 1943, *New Liskeard* on 14 Jan 1944. Former "Algerine" class Ocean Minesweepers (AM). Redesignated Coastal Escorts (FSE) in 1953. Refitted as survey ships and redesignated AGH in 1959. Again redesignated AGOR in 1964. A photograph of *Fort Frances* appears in the 1964-65 to 1966-67 editions. Sister ship *Oshawa*, AGOR 174, was placed in reserve when *Endeavour* commissioned. *Kapuskasing*, FSE 171, is on loan to the Dept of Mines and Technical Surveys.



NEW LISKEARD 1967, Royal Canadian Navy, Official

COASTAL MINESWEEPERS (MCB)

6 "Bay" Class

Name	No.	Builders	Laid down	Launched	Completed
CHALEUR	164	Marine Industries	20 Feb 56	17 Nov 56	12 Sep 57
CHIGNECTO	160	Geo. T. Davie	25 Oct 55	26 Feb 57	1 Aug 57
COWICHAN	162	Yarrows	10 July 56	26 Feb 57	19 Dec 57
FUNDY	159	Davie Shipbuilding	7 Mar 55	14 June 56	27 Nov 56
MIRAMICHI	163	Victoria Machinery	2 Feb 56	22 Feb 57	28 Oct 57
THUNDER	161	Port Arthur	1 Sep 55	27 Oct 56	3 Oct 57

Displacement, tons	390 standard; 412 full load
Dimensions, feet	140 pp; 152 oa x 28 x 7 aft
Guns	1—40 mm
Main engine	2 GM V-12 diesels; 2 shafts; 2 400 bhp = 16 knots
Oil fuel	52 tons
Range, miles	4 500 at 11 knots
Complement	3 officers, 35 ratings

Extensively built of aluminium, including frames and decks. There were originally 14 vessels of this class. Named after Canadian straits and bays. Designation changed from AMC to MCB in 1954. Commissioned for Cadet Midshipman training during summer 1967.

TRANSFERS. *Chaleur* (144), *Chignecto* (156), *Cowichan* (147), *Fundy* (145), *Miramichi* (150), and *Thunder* (153), of this class were transferred to the French Navy in 1954; but six more of the same class with the same names were built for the Royal Canadian Navy to replace those transferred. *Comax* (146), *Gaspe* (143), *Trinity* (157), and *Ungava* (148) of this class were transferred to the Turkish Navy under Mutual Aid arrangements in 1958.

DISPOSALS
Of the "Bay" class, *Fortune*, *James Bay*, *Quinte* and *Resolute* were declared surplus in 1965. *Fortune* (renamed *Offshore*) and *James Bay* were sold for oil exploration and are active commercially.



MIRAMICHI Added 1964, Royal Canadian Navy, Official

GATE VESSELS (YMG)

5 "Porte" Class

Name	No.	Builders	Laid down	Launched	Completed
PORTE DAUPHINE	186	Pictou Foundry	16 May 51	24 Apr 52	10 Dec 52
PORTE DE LA REINE	184	Victory Machinery	4 Mar 51	28 Dec 51	19 Sep 52
PORTE QUEBEC	185	Burrard Dry Dock	15 Feb 51	28 Aug 51	7 Oct 52
PORTE ST. JEAN	180	Geo. T. Davie	16 May 50	21 Nov 50	4 June 52
PORTE ST. LOUIS	183	Geo. T. Davie	21 Mar 51	22 July 52	28 Aug 52

Displacement, tons	429 full load
Dimensions, feet	125.5 x 26.3 x 13
Guns	1—40 mm AA
Main engines	Diesel, A/C Electric; 1 shaft; 600 bhp = 11 knots
Complement	3 officers; 20 ratings

Of trawler design. Multi-purpose vessels used for operating the gates in the A/S booms, fleet auxiliaries, anti-submarine netlayers for entrances to defended harbours, Capable of being fitted for minesweeping. Designation changed from YNG to YMG in 1954. *Porte Dauphine* is on loan to the Department of Transport. *Porte St. Jean* and *Porte St. Louis* are used during the summer for the training of Reserves on the Great Lakes. Photographs of *Porte St. Jean* appear in the 1952-53 to 1960-61 and 1962-63 to 1965-66 editions, and of *Porte Quebec* in the 1961-62 edition.



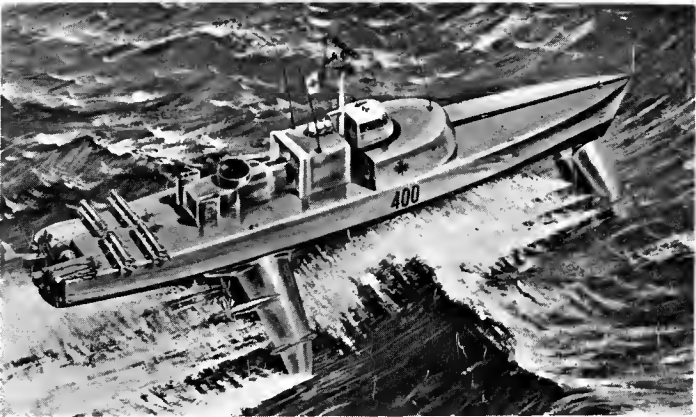
PORTE ST. LOUIS 1966, Royal Canadian Navy, Official

ANTI-SUBMARINE HYDROFOIL (FHE)

BRAS D'OR (FHE 400)

Displacement, tons	180
Dimensions, feet	151.5 oa x 21.5 x 15 (hull depth); 23 (hull-borne draught); 7.5 (60 knots draught); foil base 90
Main engines	Pratt & Whitney FT4A—2 gas turbine when foil-borne; 22 000 shp = 50 to 60 knots Davey-Paxman diesel when hull-borne, 2 000 shp = 12 to 15 knots P & W.. ST—6 gas turbine for hull-borne boost and foil-borne auxiliary power; 390 shp

De Havilland Aircraft of Canada Ltd, Toronto, designed this prototype all-weather, ocean-going hydrofoil craft. Completion was delayed by fire on 7 Nov 1966. Designated FHE for Fast Hydrofoil Escort. The supercavitating bow foil has a 22.5 ft span and the delayed cavitation main-foil has a 65 ft span. Marine Industries Ltd, Sorel, Que, were the sub-contractor for the assembly and outfitting of the vessel, of welded all-aluminium construction. Named *Bras d'Or* in recognition of early work on hydrofoils by Alexander Graham Bell and F. W. Baldwin on Bras d'Or Lake, Cape Breton Island.



BRAS d'OR 1966, Royal Canadian Navy, Official

PATROL CRAFT (PCS)

3 "Bird" Class Small Submarine Chasers

CORMORANT (PCS 781)	LOON (PCS 780)	MALLARD (PCS 783)
Displacement, tons	66 full load	
Dimensions, feet	92 x 17 x 5.3	
Guns	1—20 mm Oerlikon AA	
A/S weapons	Hedgehog and depth charges	
Main engines	2 diesels; 1 200 bhp = 14 knots	
Complement	21	

Loon, first of the class, commissioned on 14 Dec 1955. Designed for harbour patrol and training. Primarily of wood and aluminium construction. Fitted with sonar and anti-submarine apparatus. The fourth boat of this class, *Blue Heron*, was lent to the Marine Section of the Royal Canadian Mounted Police in 1956. A photograph of *Loon* appears in the 1956-57 to 1963-64 editions.



CORMORANT 1964, Royal Canadian Navy, Official

AUXILIARY RESEARCH VESSEL

LAYMORE AGOR 516

Measurement, tons	560 gross; 262 net
Dimensions, feet	176.5 x 32 x 8
Main engines	General Motors diesel; 1 000 bhp = 10.8 knots

Formerly a coastal supply vessel, classed as a fleet auxiliary and designated AKS. Converted into a research vessel 2 Aug 1965 to Mar 1966, and designated AGOR. Her original sister ship *Eastore* was sold on 30 July 1964.

SUPPLY VESSELS (AKS)

SCATARI (ex-Malahat) AKS 514

Measurement, tons	233
Dimensions, feet	97 x 20 x 9
Main engines	Diesel; 1 shaft; 400 bhp

Ex-RCAF supply ship. RCNR summer training ship on Great Lakes.

DIVING TENDERS

YMT 11

Displacement, tons 110
Dimensions, feet 88 x 20 x 4.8 mean
Main engines GM diesels; 228 bhp = 10.75 knots

YMT 11 was completed in Jan 1962 and YMT 12 on 7 Aug 1963, both by Ferguson Industries Ltd, Pictou, Nova Scotia. They can dive four men at a time to a depth of 250 feet and are fitted with a recompression chamber. A photograph of YMT 11 appears in the 1962-63 edition.
There are small diving tenders YMT 6, YMT B, YMT 9 and YMT 10, 70 tons, 75 x 18.5 x 8.5 feet, 2 diesels 165 bhp, YMT 1 (46 ft) was transferred to the Naval Research Establishment as a yard craft. YMT 3 and YMT 5 were declared surplus and sold in 1963. YMT 2 and YMT 7 are 46-ft, wooden hulled single screw vessels. Two new diving tenders, YSD 1 and YSD 2, entered service in 1965.
Also torpedo recovery vessels *Nimkish*, YMR 120, and *Songhee*, YMR 1. The yacht *Oriole*, QW 3, used for officer cadet training, has been in commission since 1953.

DISPOSAL

The diving depot ship GRANBY, YMT 180, originally a "Bangor" (Diesel) class fleet minesweeper (AM), redesignated coastal escort (FSE) in 1953 and clearance diving depot ship (YMT) in 1959 after having been employed as a submarine rescue vessel, was declared surplus in 1967 and replaced by the ocean escort *Victoriaville*, converted to a diving depot ship and renamed *Granby* (see previous page).

OILERS (AO)

2 "Dun" Class

DUNDALK (AOC 50)

Displacement, tons 950
Dimensions, feet 178.8 x 32.2 x 13
Main engines Diesel; 700 bhp = 10 knots

Small vessels designated tankers, and classed as fleet auxiliaries. A photograph of *Dundalk* appears in the 1949-50 to 1959-60 editions.

DUNDURN (AOC 502)

TUGS

3 "Saint" Class

Name	No.	Laid down	Launched	Completed
SAINT ANTHONY	ATA 531	15 July 1954	2 Nov 1955	22 Feb 1957
SAINT CHARLES	ATA 533	28 Apr 1954	10 July 1956	7 June 1957
SAINT JOHN	ATA 535	1 Dec 1953	14 May 1956	23 Nov 1956

Displacement, tons B40 full load
Dimensions, feet 151.5 x 33 x 17
Guns 2-40 mm Bofors AA
Main engines Diesel; 1 shaft; 1 920 bhp = 14 knots

Ocean tugs. Authorized under the 1951 Programme. All built by the St. John Dry Dock Co. A photograph of *Saint John* appears in the 1957-58 to 1959-60 editions.

3 "Ton" Class

CLIFTON (ATA 529)

HEATHERTON (ATA 527)

RIVERTON (ATA 528)

Displacement, tons 462
Dimensions, feet 104 pp; 111.2 oa x 28 x 11
Main engines Dominion Sulzer diesel; 1 000 bhp = 11 knots
Complement 17

Ocean tugs. *Clifton* was launched on 31 July 1944. A photograph of *Heatherton* appears in the 1952-53 to 1959-60 editions.

5 "Glen" Class

GLENBROOK GLENDYNE GLENEVIS GLENLIVIT II GLENSIDE

Dimensions, feet 80 x 20.7 x 7.2 (aft full load)
Main engines Diesel; 300 bhp = 9 knots

Big harbour tugs. *Glenlivit II* is loaned to Halifax Department of Public Works. Hull numbers are YTB 501, 503, 502, 504 and 500, respectively. Sister tugs *Glendevon*, Y 505 and *Glendon*, Y 506 were taken out of service on 31 Mar 1964 and sold to commercial interests.

3 "Wood" Class

EASTWOOD

GREENWOOD

OAKWOOD

Dimensions, feet 60 oa x 16 x 5 (aft full load)
Main engines 250 hp = 10 knots

Medium harbour tugs. Used as A/S Target Towing Vessels. Launched 1944. Hull numbers are YMT 550, 551 and 554 respectively. *Wildwood* was stricken from the Navy List in 1959. *Lakewood* was declared surplus in 1966.
Other medium harbour tugs are:
FT1, FT2. Employed as fire tugs, Hull numbers YMT 556 and 557 respectively. Sister fire tug FT3, YMT 558, was taken out of service on 31 Mar 1964 and loaned to Dept of Public Works, St. John's, Newfoundland.

13 "Ville" Class

ADAMSVILLE BEAMSVILLE LAWRENCEVILLE	LISTERVILLE LOGANVILLE MANNVILLE	MARYSVILLE MERRICKVILLE OTTERVILLE	PARKSVILLE PLAINSVILLE QUEENSVILLE YOUVILLE
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Dimensions, feet 40 x 10.5 x 4.8
Main engines Diesel; 1 shaft; 150 bhp

Small harbour tugs. Majority employed on towing duties at Esquimalt and Halifax: Hull numbers are YTS 5B2, 5B3, 5B4, 578, 589, 577, 585, 581, 590, 579, 587, 5B6 and 588 respectively. Sister tugs *Colville*, Y 576, and *Eckville*, Y 580, were taken out of service on 31 Mar 1964 for disposal. The small harbour tugs *Shoveller* and *Valliant* Nos YTS 591 and 575, were disposed of in 1966.

R.C.M.P. MARINE DIVISION

YMT 12

WOOD

Displacement, tons 600
Dimensions, feet 178 oa x 29 x 9
Main engines 2 Fairbanks-Morse diesels; 2 shafts; 2660 bhp = 16 knots
Complement 60

Built by Geo. T. Davie and Sons Ltd, Lauzon, Levis, Quebec. Completed in July 1958. Used for patrol on the east coast of Canada, this ship is built of steel, strengthened against ice, with aluminium superstructure.



WOOD

1966, Director of Marine Services, Official

FORT STEELE

Displacement, tons 85
Dimensions, feet 110 wl; 118 oa x 21 x 7
Main engines Two 1B-cyl Napier Deltic diesels; 2 shafts; Kamewa controllable pitch propellers; 5 000 bhp = over 20 knots
Complement 16

Completed by Canadian Shipbuilding & Engineering Ltd in Nov 1958. Patrol craft on the east coast. Built of steel with aluminium superstructure. Twin rudders.



FORT STEELE

1960, Director of Marine Services, Official

2 "Bird" Class

BLUE HERON

VICTORIA

Displacement, tons 66 full load
Dimensions, feet 92 x 17 x 5.3
Main engines 2 diesels; 1 200 bhp = 14 knots
Complement 20

Blue Heron was built for the Royal Canadian Navy by Hunter Boat Works, Orillia. Launched at Barrie, Ontario, in Dec 1955. Completed on 30 July 1956. Transferred on loan to the RCMP Marine Section on 19 Nov 1956 as a sea rescue craft. Similar to *Cormorant* (see photograph on previous page). *Victoria* was built for the RCMP by Yarrows Limited, Victoria. Completed in Dec 1955. She is a steel copy of the wooden "Bird" class inshore patrol vessels, *Loon* and *Mallard*.

13 "Detachment" Class

ACADIAN ADVERSUS	ALERT BURIN	CAPTOR DETECTOR GANGES	INTERCEPTOR MASSET NANAIMO	TAHSIS TOFINO WESTVIEW
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Displacement, tons 48
Dimensions, feet 65 x 15 x 4
Main engines 1 Cummins diesel; 1 shaft; 410 bhp = 12 knots

Coastal patrol police boats built for service on the east and west coasts.

LITTLE BOW II

SIDNEY

Displacement, tons 27
Dimensions, feet 55 x 14 x 4
Main engines 2 General Motors turbojet engines; 600 bhp = 16 knots

These turbojet craft were built as an experiment and no additions are contemplated.

6 "Detachment" Class (Great Lakes)

CARNDUFF II CHILCOOT II	CUTKNIFE II MOOSOMIN II	SHAUNAVON II TAGISH II
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Dimensions, feet 50 x 15 x 3
Main engines 2 gasoline engines; 750 bhp = over 20 knots

A class of small, fast patrol craft built for service on the Great Lakes. There are also *Advance*, *Beaver*, *Fort Erie*, *Fort Francis II*, *Fort St. James*, *Fraser*, *Kenora III*, *Port Alice*, *Sorel* and *Valleyfield*, 26 to 36 feet in length with petrol motors, speeds up to 27 knots. Six are on the Great Lakes and four on the West Coast.

CANADIAN COAST GUARD

Administration

- Minister of Transport:
Hon J. W. Pickersgill, PC, MP, MA, BLitt
- Deputy Minister of Transport:
Mr. John R. Baldwin, MA, BLitt
- Assistant Deputy Minister, Marine:
Dr Gordon W. Stead, DSC, BComm, BA, LLD, CIMarE
- Director Marine Operations:
Rear Admiral Anthony H. G. Storrs, DSC, CD, RCN (Ret'd)
- Director, Shipbuilding:
Mr J. Rankine Strang, MRINA, MSNA & ME, MASNE

Establishment

The Canadian Coast Guard, formerly the Canadian Marine Service, is the sea going component of the Department of Transport. It was formed with Confederation in 1867 from previously existing organizations. Until the Royal Canadian Navy developed out of it immediately before the First World War, it was an armed Service. Further re-organizations have occurred since and the old name was resumed in 1960.

On 26 January 1962, the new name "Canadian Coast Guard" was adopted in recognition of the considerable expansion the fleet had undergone in the previous several years, in scope of operations, in number of vessels, and in standards of operation.

Throughout its history, the Canadian Coast Guard has supplied and maintained aids to navigation for the Department on the Atlantic and Pacific Coasts, in Hudson Bay and Strait, Western Arctic, Great Lakes, St. Lawrence River, and Mackenzie River.

The Department has long operated icebreakers for flood prevention in the St. Lawrence, extension of the coastal navigation season, and patrol of the Hudson Bay route to Churchill. In recent years the demand for assistance in Arctic and winter navigation has grown considerably and the number of icebreakers included in the fleet has correspondingly increased.

Organisation

The Canadian Coast Guard now has 191 vessels of all types, including some 50 ships of larger size, from about 400 tons to over 6 000 tons gross. These include 10 fully strengthened icebreakers and eight lighter supply and buoy vessels capable of icebreaking.

In addition there are eight other vessels designed for special service in the Arctic, ten lighthouse supply and buoy ships, weatherships, lightships, a Great Lakes research vessel, shallow draft ships for the Mackenzie River, St. Lawrence Ship Channel survey vessels, shore-based lifeboats and 114 steel landing craft for various Arctic uses.

Since 1954 the Department has assumed increasing responsibility for the re-supply of numerous and widely scattered military and civil Arctic installations until by 1961 its operations covered the whole Canadian North. In the Eastern Arctic, the supply function is carried out by convoys of chartered merchant ships escorted by icebreakers. The icebreaker masters act as convoy commodores and are assisted by northern supply vessels. Ice reconnaissance is provided by fixed wing aircraft under the direction of the Meteorological Branch of the Department with close reconnaissance by helicopters carried in the icebreakers and assisted by ice observers of the Meteorological Branch. The use of photography from space satellites for ice reconnaissance is in the development stage. Ship-shore handling of supplies is carried out by a fleet of landing craft maintained in the North and operated by the Canadian Coast Guard. In the Western Arctic, an icebreaker covers supply convoys. Total Arctic re-supply involves handling some 100 000 tons of cargo annually.

Duties

Commercial winter navigation in the Gulf of St. Lawrence is supported by icebreakers based on the Atlantic Coast area and directed from an operations room in Sydney, Nova Scotia. Information about ice is provided by the Meteorological Branch as in the case of the Arctic operation.

In the Arctic and the Gulf of St. Lawrence, advantage is taken of the presence of Canadian Coast Guard vessels to afford opportunities for hydrographers, oceanographers and other scientists to extend their knowledge of the waters of Canada which can only be navigated by icebreakers. Information from these programmes is in turn used to support and develop the ability to navigate in ice congested waters. The specialists carried for these purposes are provided by other Departments of the Canadian Government. Some of this work was recently extended into arctic areas not previously traversed by ship. On the Great Lakes one vessel, on loan from the Royal Canadian Navy, is operated on behalf of a group of research organizations in the fields of meteorology and limnology.

The Canadian Coast Guard co-ordinates the marine element in the national air sea rescue organization which is under the overall control of the Royal Canadian Air Force. This involves the provision of special craft for search and rescue purposes. These include five 95 ft. cutters, three 70 ft. cutters and two 38 ft. cutters. Two of the largest types serve on the Pacific Coast, two on the Atlantic Coast, and one on the Great Lakes in Summer and the East Coast in Winter. The three 70 ft. boats are used on the Great Lakes. The smallest type are stationed on the West Coast.

The fleet's capabilities in the realm of search and rescue are being increased by the addition of four, and possibly six, 235 ft. deep-sea cutters specially designed for search and rescue work.

Tenders for these ships are expected to be called during 1967 and 1968. The contract for the first one was awarded to Davie Shipbuilding Limited, Lauzon, Que., in February of this year.

The vessels will have a load displacement of 2 025 tons, a maximum shaft horsepower of 9 176 and a trial speed of 18.75 knots. They will have twin screw, geared diesel power and each will be fitted with a helicopter deck and telescopic helicopter hangar.

Weather Station "Papa" in the mid-Pacific Ocean is maintained by ships of the Canadian Coast Guard, the specialist staff being supplied by the Meteorological Branch of the Department. Oceanographic work is also carried out from these ships. Two new weather ships to replace the frigates on loan from the Royal Canadian Navy have been built for this service.

The Department of Transport is responsible for maintaining and improving the St. Lawrence Ship Canal from Montreal to the sea. Canadian Coast Guard vessels carry out the necessary surveys.

New Construction

A new sounding vessel, CCGS "Nicolet", was accepted from the builders, Collingwood Shipyards, Collingwood, Ontario, in December, 1966. She was built as a replacement for CCGS "Frontenac", which has been in service since 1930. CCGS "Nicolet" is 166.5 feet long, with a beam of 35 feet and a loaded draught of 9.5 feet. She is driven by two diesels with a total of 1 350 shp and has a load displacement of 850 tons.

An icebreaker buoy tender and lighthouse supply ship is being built by Davie Shipbuilding Limited, Levis, Que., to replace the small icebreaker CCGS "Saurel", due for retirement and the non-icebreaking buoy vessel "Chesterfield", which is also at the end of her economically useful life. The new ship will have a full load displacement of 3 096 tons, with an overall length of 231 feet, a beam of 49 feet and a load draught of 16 feet. Her propulsion will be diesel-electric, totalling 4 250 shaft horsepower and driving two propellers. She will be fitted with a helicopter deck and telescopic hangar for the aircraft. Completion is scheduled for 1967.

An icebreaking lighthouse supply and buoy vessel is being built at Port Weller Dry Docks Ltd, Port Weller, Ont., to replace the old steamship CCGS "Safeguarder", which will be retired. The vessel will be 181.5 feet long, with a beam of 38 feet and a loaded draught of 12 feet. Her load displacement will be 1 270 tons. Completion is scheduled for autumn, 1967.

In addition the following ships are in the planning stages: A marine agency tender for service at the lakehead (Port Arthur Marine Sub-Agency); replacements for the Northern Supply Vessels (converted LSTs) CCGS "Gannet" and CCGS "Puffin"; icebreaking supply and buoy vessel for the Prescott, Ont. District Marine Agency (replacement for CCGS "Grenville"); Marine agency tenders for St. John's Newfoundland (replacement for CCGS "Sea Beacon") and Saint John, New Brunswick District Marine Agencies; a supply and buoy vessel for Dartmouth, Nova Scotia District Marine Agency (replacement for CCGS "Brant"); a marine agency tender for the lower Lake Erie-Lake St. Clair region; a supply and buoy vessel for the Victoria, B.C. Marine Agency, (replacement for CCGS "Estevan"); a sounding vessel for the St. Lawrence Ship Channel (replacement for CCGS "Detector"); a St. Lawrence Ship Channel survey vessel and a marine agency tender that will operate in the lower Great Lakes.

Strength of the Fleet

Full icebreakers	..	..	..	..	..	10
Light icebreaker Buoy Vessels	..	..	..	..	..	8
Icebreaking Cable Repair Vessel	..	..	..	..	..	1
Special Arctic Service Vessel	..	..	..	..	..	1
Lighthouse Supply and Buoy Vessels	..	..	..	..	..	10
Northern Supply Vessels	..	..	..	..	..	6
Northern Service Depot Ship	..	..	..	..	..	1
St. Lawrence Ship Channel Work	..	..	..	..	..	6
Weather Ships (2 in reserve)	..	..	..	..	..	4
Great Lakes Marine and Meteorology Research	..	..	..	..	..	1
Search and Rescue Cutters, 95 feet	..	..	..	..	..	5
Search and Rescue Cutters, 70 feet	..	..	..	..	..	3
Search and Rescue Cutters, 38 feet	..	..	..	..	..	2
Mackenzie River Shallow Draft Buoy Vessels	..	..	..	..	..	4
Steel Landing Craft	..	..	..	..	..	114
Lightships	..	..	..	..	..	3
Marine Agency Tenders	..	..	..	..	..	9
Shore Based Lifeboats	..	..	..	..	..	3
Total, Canadian Coast Guard Vessels	..	..	..	..	..	191
Other vessels operated by the Department of Transport						
Pilotage	..	..	..	..	..	14
Canals Works	..	..	..	..	..	37
						51
Total vessels operated by the Department of Transport including Canadian Coast Guard, Pilotage and Canals						
						242

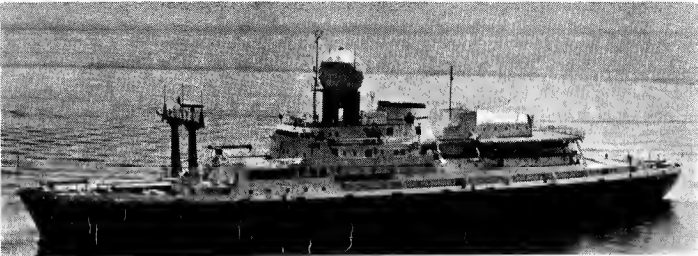
WEATHER SHIPS

2 New Construction

Name	Laid down	Launched	Completed
QUADRA	Feb 1965	4 July 1966	Mar 1967
VANCOUVER	Mar 1964	29 June 1965	4 July 1966

Displacement, tons	5 600 full load
Dimensions, feet	361.2 pp; 404.2 oa × 50 × 17.5
Main engines	Turbo-electric; 2 shafts; 7 500 shp = 18 knots.
Boilers	2 automatic Babcock & Wilcox D type
Range, miles	8 400 at 14 knots
Complement	96

New type, turbo-electric twin screw weather and oceanographic vessels for Pacific Ocean service. Both built by Burrard Drydock Limited, North Vancouver, B.C. They replace the Coast Guard weather ships, former frigates, which have been in service for many years, on loan from the Royal Canadian Navy, for Ocean Station "Papa" 900 miles west of the British Columbia coast. They have bow water jet reaction system to assist steering at slow speeds. Flume stabilization systems are fitted. They are turbo-electric powered, with oil-fired boilers to provide the quiet operation needed for vessels housing much scientific equipment. Their complement includes 15 technical officers such as meteorologists, oceanographers and electronics technicians.



VANCOUVER 1967, Canadian Coast Guard, Official

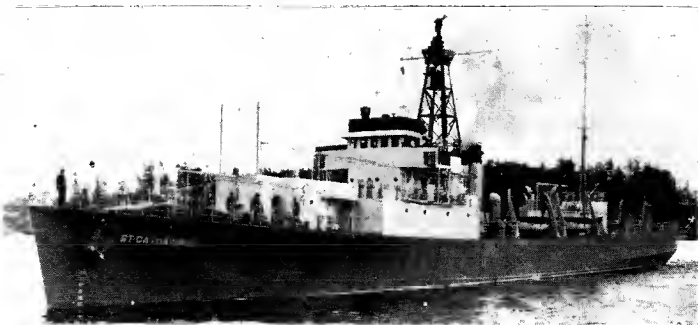
3 Former "River" Class Frigates

Name	Builders	Launched
ST. CATHERINES (R)	Yarrows Limited, Esquimalt, BC	6 Dec 1942
STONETOWN (R)	Canadian Vickers Limited, Montreal	28 Mar 1944
ST. STEPHEN	Yarrows Limited, Esquimalt, BC	6 Feb 1944

Displacement, tons	1 490 standard; 2 216 full load
Measurement, tons	1 895 gross
Dimensions, feet	283 pp; 301.5 oa × 36.5 × 13.5
Main engines	Triple expansion; 2 shafts; 3 700 ihp = 14 knots
Boilers	2 Admiralty 3-drum type
Oil fuel (tons)	640
Radius, miles	9 500 at 12 knots

Former frigates of the Royal Canadian Navy acquired by the Department of Transport and converted to weather ships in 1950. Armament removed. (R) *St. Catherines* and *Stonetown* are in reserve.

PHOTOGRAPHS. A photograph of *Stonetown* (when in the Royal Canadian Navy) appears in the 1966-67 and earlier editions.



ST. CATHERINES 1963, Canadian Coast Guard, Official



MARMOT unloading on beach at Frobisher Bay, Baffin Island 1967, Canadian Coast Guard, Official

CABLE REPAIR SHIPS

1 Dual Purpose Type

JOHN CABOT	
Displacement, tons	6 375 full load
Dimensions, feet	313.3 × 60 × 21.5
Main engines	Diesel-electric; 2 shafts; 9 000 shp = 15 knots
Range, miles	10 000 at 12 knots
Complement	85 officers and men

Combination cable repair ship and icebreaker. Built by Canadian Vickers Limited, Montreal. Laid down in May 1963, launched on 15 Apr 1964 and completed in July 1965. Designed to repair and lay cable over the bow only. For use in East Coast and Arctic waters. Bow water jet reaction manoeuvring system, heeling tanks and Flume stabilisation system. Three circular storage holds handle a total of 400 miles of submarine cable. Personnel include technicians and helicopter pilots, the ship being designed for use with that type of aircraft.



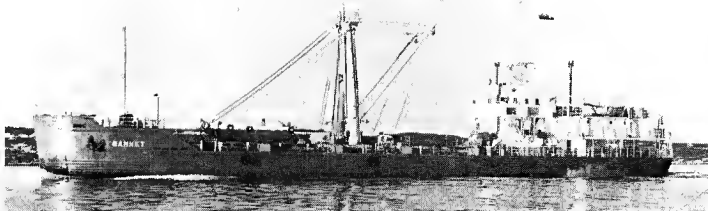
JOHN CABOT 1966, Canadian Coast Guard, Official

NORTHERN SUPPLY VESSELS

7 Former Tank Landing Craft (LCT 8s)

AUK	EIDER	GANNET	PUFFIN	RAVEN	SKUA
Measurement, tons	1 083 to 1 104 gross				
Dimensions, feet	225 pp; 231.2 oa × 38 × 3				
Main engines	Diesel; 1 000 shp = 9 knots				

Converted LCT (8)s, acquired from Great Britain in 1957-61. Built by Harland & Wolff, Belfast (*Puffin* and *Raven*), Sir Wm. Arrol & Co Ltd, Glasgow (*Eider* and *Gannet*) and Alexander Findley, Dumbarton (*Auk*). All completed in 1946. A photograph of *Skua* appears in the 1962-63 to 1964-65 editions. Sister ship *Nanook*, officially rated as a Northern Service Depot Ship, is in reserve.

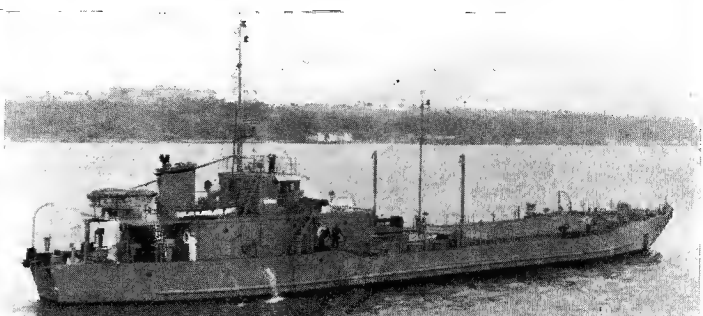


GANNET 1965, Canadian Coast Guard, Official

2 Former Tank Landing Craft (LCT 4s)

MARMOT		MINK
Displacement, tons	586 full load	
Dimensions, feet	187.2 × 33.8 × 4	
Main engines	Diesel ; 920 shp = 8 knots	

Converted LCT(4)s acquired from Great Britain in 1958. Completed in 1944. Officially rated as Steel Landing Craft for Northern Service.



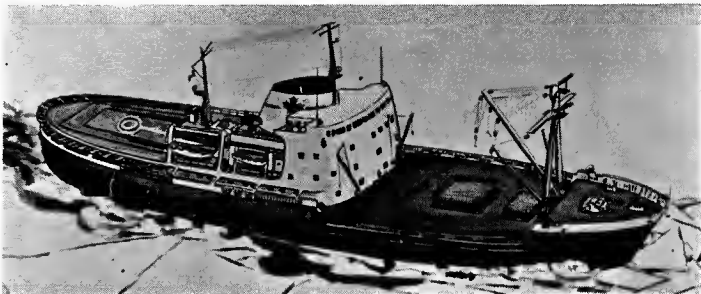
MINK 1963, Canadian Coast Guard, Official

FULL ICEBREAKERS

1 New Construction Gulf Type

Displacement, tons	6 320 full load
Dimensions, feet	295 oa × 62·5 × 20
Aircraft	1 helicopter
Landing craft	2
Main engines	4 diesels and 2 gas turbines powering 2 electric motors; 2 shafts; 12 000 shp = 15 knots service
Complement	55

A new type of icebreaker for use in the Gulf of St Lawrence and East Coast waters. Under construction at the yard of Canadian Vickers Limited, Montreal. This is the world's first application of gas turbine electric propulsion for booster power in an icebreaker. The ship will have a flight deck with telescopic helicopter hangar. Scheduled for completion in June 1969.



GULF ICEBREAKER (official drawing) 1967, Canadian Coast Guard

1 New Construction Large Type

LOUIS S. ST. LAURENT

Displacement, tons	13 000 full load
Dimensions, feet	366·5 oa 80 × 31
Aircraft	2 helicopters
Main engines	Turbo-electric; 3 shafts; 24 000 shp = 17·75 knots trials
Range, miles	16 000 miles at 13 knots cruising speed
Complement	Total accommodations for 216

The construction of this new icebreaker for service in the Arctic and the Gulf of St. Lawrence is nearing completion at Canadian Vickers Limited, Montreal. She will be larger than any of the present Coast Guard icebreakers. This triple screw ship with a steam turbo-electric propulsion system will be the world's most powerful non-nuclear powered icebreaker. She will have a helicopter hangar below the flight deck, with an elevator to raise the two helicopters to the deck when required. She was launched on 3 Dec 1966 and is scheduled to enter service in the spring of 1968. She was estimated to cost \$18 719 075.



LOUIS S. ST. LAURENT (Artist's impression) 1966, Canadian Coast Guard, Official

JOHN A. MACDONALD

Displacement, tons	9 160 full load
Measurement, tons	6 186 gross
Dimensions, feet	315 × 70 × 28
Main engines	Diesel-electric; 15 000 shp = 15·5 knots designed

Completed by Davie Shipbuilding Limited, Lauzon, Port Quebec, in Sep 1960.



JOHN A. MACDONALD 1966, Canadian Coast Guard, Official

WOLFE

Displacement, tons	3 005 full load
Measurement, tons	2 022 gross
Dimensions, feet	220 × 48 × 16
Main engines	Steam reciprocating; 4 000 ihp = 13 knots designed

Built by Canadian Vickers Limited, Montreal. Completed in Nov 1959.

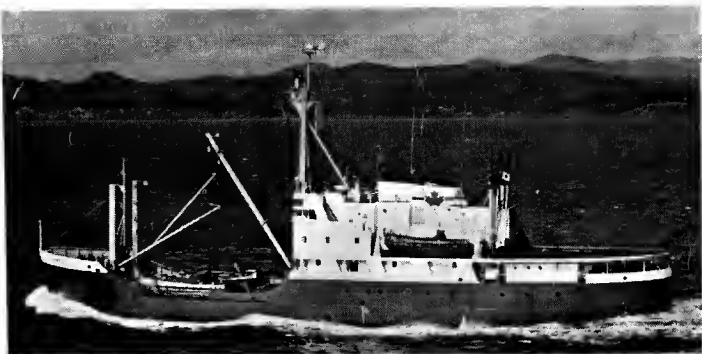


WOLFE 1963, Canadian Coast Guard, Official

CAMSELL

Displacement, tons	3 072 full load
Measurement, tons	2 020 gross
Dimensions, feet	223·5 × 48 × 16
Main engines	Diesel-electric; 4 250 shp = 13 knots designed

Completed by Burrard Dry Dock Company Limited, Vancouver, BC in Oct 1959.



CAMSELL 1967, Canadian Coast Guard, Official

SIR HUMPHREY GILBERT

Displacement, tons	3 000 full load
Measurement, tons	1 930 gross
Dimensions, feet	220 × 48 × 16·3
Main engines	Diesel-electric; 4 250 shp = 13 knots designed

Completed by Davie Shipbuilding Limited, Lauzon, Port Quebec, in June 1959.



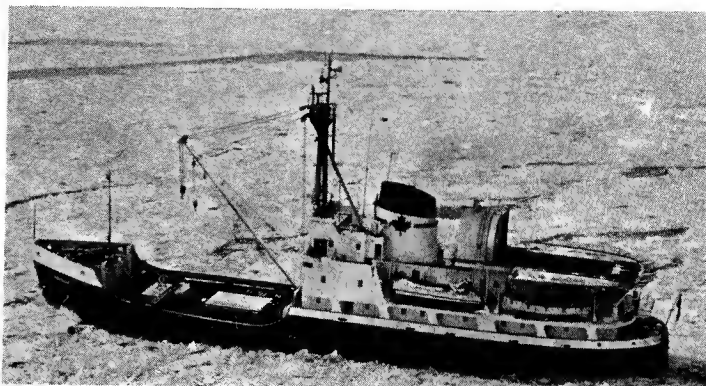
SIR HUMPHREY GILBERT 1963, Canadian Coast Guard Official

Full Icebreakers—continued

MONTCALM

Displacement, tons 3 005 full load
 Measurement, tons 2 017 gross
 Dimensions, feet 220 × 48 × 16·3
 Main engines Steam reciprocating; 4 000 ihp = 13 knots designed

Completed by Davie Shipbuilding Limited, Lauzon, Port Ouebec, in June 1957.



MONTCALM

Jan 1967, Canadian Coast Guard, Official

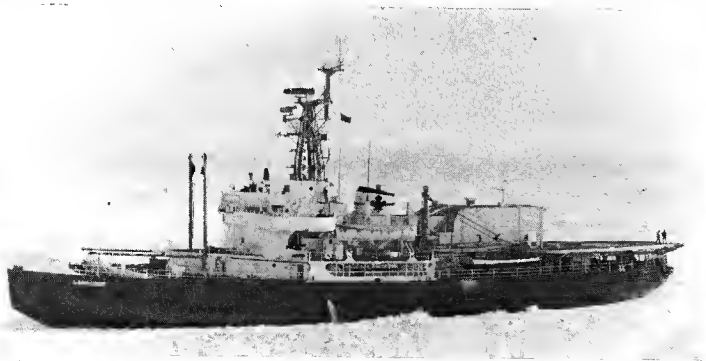
LABRADOR

Displacement, tons 6 490 full load
 Measurement, tons 3 823 gross
 Dimensions, feet 269 pp; 290 oa × 63·5 × 29
 Aircraft Provision for 2 helicopters
 Main engines Diesel-electric 10 000 shp = 16 knots designed

When commissioned in the Royal Canadian Navy was rated as Arctic Patrol Vessel, Helicopter Carrier and Icebreaker. Original designation was AGB, changed to AW, No. 50 in 1954. First naval vessel to traverse the North West Passage and circumnavigate North America, when she was Canada's largest and most modern icebreaker. High-tensile steel sides 1·6 inches thick, and heeling tanks. Aircraft hangar and flight deck aft for operating helicopters carries two landing craft strengthened to resist ice. Latest navigational devices, and equipped with instruments for hydrography, oceanography, meteorology, cosmic ray research, ice reconnaissance and other scientific purposes. Fitted with Denny Brown stabilisers. Propelling machinery can be controlled from bridge. She was transferred, on loan, to the Department of Transport and subsequently acquired from the Royal Canadian Navy outright. Mounting for two 40 mm forward. Guns removed.

A photograph of *Labrador* as an Arctic Patrol Vessel in the Royal Canadian Navy appears in the 1966-67 and earlier editions.

Built by Marine Industries Limited, Sorel, Ouebec. Ordered in Feb 1949, laid down on 18 Nov 1949, launched on 14 Dec 1951 and completed for the Royal Canadian Navy on 8 July 1954, but transferred to the Department of Transport in Feb 1958.



LABRADOR

1965, Canadian Coast Guard, Official

d'IBERVILLE

Displacement, tons 9 930 full load
 Measurement, tons 5 678 gross
 Dimensions, feet 310 × 66·5 × 30·2
 Main engines Steam reciprocating; 10 800 ihp = 15 knots designed
 Completed by Davie Shipbuilding Limited, Lauzon, Port Ouebec, in May 1953.



d'IBERVILLE

1967, Canadian Coast Guard, Official

ERNEST LAPOINTE

Displacement, tons 1 675 full load
 Measurement, tons 1 179 gross
 Dimensions, feet 184 × 36 × 15·5
 Main engines Steam reciprocating; 2 000 ihp = 13 knots designed

Completed by Davie Shipbuilding Limited, Lauzon, Port Ouebec, in Feb 1941.



ERNEST LAPOINTE

1966, Canadian Coast Guard, Official

N. B. McLEAN

Displacement, tons 5 034 full load
 Measurement, tons 3 254 gross
 Dimensions, feet 277 × 60·5 × 19·6
 Main engines Steam reciprocating; 6 500 ihp = 13 knots max

Completed by Halifax Shipyards, Limited, Halifax, NS, in 1930.



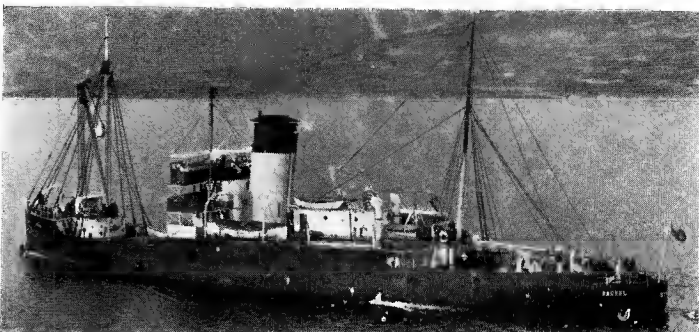
N. B. McLEAN

1966, Canadian Coast Guard, Official

SAUREL

Displacement, tons 1 892 full load
 Measurement, tons 1 176 gross
 Dimensions, feet 212 × 42 × 14·2
 Main engines Steam reciprocating; 3 000 ihp = 11 knots max

Completed by Canadian Vickers Limited, Montreal, in 1929.



SAUREL

1963, Canadian Coast Guard, Official

SEARCH AND RESCUE CUTTERS

RACER	RALLY	RAPID	READY	RELAY
Measurement, tons	153 gross			
Dimensions, feet	95.2 × 20 × 6.5			
Main engines	Diesel; 2 400 bhp = 20 knots <i>designed</i>			

Built by Yarrows Ltd, Esquimalt, BC; Davie Shipbuilding Ltd, Lauzon, P.Q.; Ferguson Industries, Picton, NS; Burrard Dry Dock, Vancouver; and Kingston Shipyard, respectively. All completed in 1963.



RELAY 1964, Canadian Coast Guard, Official

SPINDRIFT	SPRAY	SPUME
Measurement, tons	57 gross	
Dimensions, feet	70 × 16.8 × 4.7	
Main engines	2 diesels; 1 500 bhp = 19 knots <i>designed</i>	

Built by Cliff Richardson Boats Ltd, Meaford, Ont; J. J. Taylor & Sons, Ltd, Toronto; and Grew Ltd, Pehetanguishene, Ont, respectively. Completed in 1963-64.



SPINDRIFT 1966, Canadian Coast Guard, Official

LIGHT ICEBREAKERS (Supply and Buoy Vessels)

SIMCOE	
Displacement, tons	1 300 full load
Dimensions, feet	179.5 × 38 × 12
Main engines	Diesel-electric; 2 000 shp = 12 knots

Completed by Canadian Vickers in 1962. Photograph in the 1963-64 edition.

SIMON FRASER	
Displacement, tons	1 876 full load
Measurement, tons	1 357 gross
Dimensions, feet	204.5 × 42 × 14
Main engines	Diesel-electric; 2 900 shp = 13.5 knots <i>designed</i>

Completed by Burrard Dry Dock Company Limited, N. Vancouver in Feb 1960.

THOMAS CARLETON	
Displacement, tons	1 532 full load
Dimensions, feet	180 × 42 × 13
Main engines	Diesel; 2 000 bhp = 12 knots <i>designed</i>

Built by Saint John Dry Dock Limited, Saint John, NB; Completed in 1960.

TUPPER	
Displacement, tons	1 872 full load
Measurement, tons	1 357 gross
Dimensions, feet	204.5 × 42 × 14
Main engines	Diesel-electric; 2 900 shp = 13.5 knots <i>designed</i>

Built by Marine Industries Limited, Sorel, Quebec. Completed in Dec 1959.

ALEXANDER HENRY	
Displacement, tons	2 497 full load
Measurement, tons	1 647 gross
Dimensions, feet	210 × 43.5 × 16
Main engines	Diesel; 3 550 bhp = 13 knots <i>designed</i>

Built by Port Arthur Shipbuilding Limited, Port Arthur. Completed in July 1959.

SIR WILLIAM ALEXANDER	
Displacement, tons	3 555 full load
Measurement, tons	2 153 gross
Dimensions, feet	227.5 × 45 × 17.5
Main engines	Diesel electric; 4 250 shp = 15 knots <i>designed</i>

Built by Halifax Shipyards, Limited Halifax. Completed in June 1959. Equipped with Flume Stabilisation System.

WALTER E. FOSTER	
Displacement, tons	2 715 full load
Measurement, tons	1 672 gross
Dimensions, feet	229.2 × 42.5 × 16
Main engines	Steam reciprocating; 2 000 ihp = 12.5 knots <i>designed</i>

Built by Canadian Vickers, Limited, Montreal. Completed in Dec 1954.

EDWARD CORNWALLIS	
Displacement, tons	3 700 full load
Measurement, tons	1 965 gross
Dimensions, feet	259 × 43.5 × 18
Main engines	Steam reciprocating; 2 800 ihp = 13.5 knots <i>designed</i>

Built by Canadian Vickers, Limited, Montreal. Completed in Dec 1949. Photograph in the 1963-64 to 1965-66 editions.

SPECIAL ARCTIC SERVICE VESSEL

C. D. HOWE	
Displacement, tons	5 170 full load
Measurement, tons	3 628 gross
Dimensions, feet	276 pp; 295 oa × 50 × 18.5
Main engines	Steam reciprocating; 4 000 ihp = 13 knots max
Range, miles	10 000 with 50 per cent reserve of fuel
Capacity	Lift of forward crane 30 000 lb

Built by Davie Shipbuilding Ltd, Lauzon, P.Q. Launched in Sep 1949. Completed in June 1950. Eastern Arctic Patrol Vessel and Supply Ship. Designed as multi-purpose vessel, being icebreaker, meteorological and survey ship, hospital ship, and potential fleet auxiliary for naval use in war. With an icebreaker hull she was of novel streamlined design with the latest Arctic navigational apparatus, and reinforced for limited work in ice.



C. D. HOWE 1967, Canadian Coast Guard, Official

SUPPLY VESSELS

MONTMORENCY	
Displacement, tons	1 006 full load
Measurement, tons	750 gross
Dimensions, feet	163 × 34 × 11
Main engines	Diesel; 1 200 bhp

Built by Davie Shipbuilding Limited, Lauzon, Port Quebec. Completed in Aug 1957.



MONTMORENCY 1963, Canadian Coast Guard, Official

CHESTERFIELD	
Displacement, tons	1 627 full load
Dimensions, feet	180 × 32 × 12.5
Main engines	Steam reciprocating; 700 ihp

Built by Collingwood Shipyards Limited. Completed in 1928. 735 tons gross

ESTEVAN	
Displacement, tons	2 071 full load
Dimensions, feet	200 × 38 × 12
Main engines	Steam reciprocating; 1 500 ihp

Built by Collingwood Shipyards Limited. Completed in 1912, 1 161 tons gross.

MONTMAGNY	
565 tons full load, 148 × 29 × 8 feet. 1 000 bhp diesel.	Built by Russel Bros, Owen Sound, Ont. Completed in May 1963.

VERENDRYE	
400 tons full load, 297 tons gross, 125 × 26 × 7 feet. 760 bhp diesel.	Built by Geo. T. Davie & Sons, Ltd, Lauzon. Completed in Oct 1959.

SIR JAMES DOUGLAS	
730 tons full load, 564 tons gross, 150 × 30 × 10.3 feet. 1 000 bhp diesel.	Built by Burrard Drydock, N. Vancouver, BC. Completed in Nov 1956.

ALEXANDER MACKENZIE	
736 tons full load, 556 tons gross, 150 × 30 × 10.2 feet. 1 000 bhp diesel.	Built by Burrard Drydock, N. Vancouver, BC. Completed in 1950.

C. P. EDWARDS	
571 tons full load, 338 tons gross, 144.2 × 27 × 9.5. Steam reciprocating. 375 ihp.	Built by Collingwood Shipyards Limited. Completed in 1946.

GRENVILLE	
677 tons full load, 479 tons gross, 155 × 30.8 × 9.5 feet. Steam reciprocating 900 ihp.	Built by Poulson Iron Works Limited. Completed in 1915.

SAFEGUARDER	
665 tons gross, 160 × 29 × 11.8 feet. Steam reciprocating. 1 350 ihp.	Built at Southampton, United Kingdom. Completed in 1914.

DISPOSAL	
Brant was officially listed for disposal and deleted in 1967.	

CEYLON

Administration

The Royal Ceylon Navy was formed on 9 Dec 1950 when the Navy Act was proclaimed.

Captain of the Navy:
Commodore Rajanathan Kadirigamar,
MVO

Diplomatic Representation

Services Attaché in London:
Major B. Justus Rodrigo

Strength of the Fleet

1 Frigate
1 Hydrofoil Craft
15 Patrol Boats
1 Tug

Naval Base

The Naval Base is established at Trincomalee, which was a British base from 1795 until 1957.

Personnel

1966: 2,060 (160 officers and 1,900 ratings)
1967: 1,826 (117 officers and 1,709 ratings)

FRIGATE

1 Ex-Canadian "River" Class

Displacement, tons	1 445 standard; 2 360 full load
Length, feet (metres)	283 (86.3) pp; 295.5 (90.1) wl; 310.5 (91.9) oa
Beam, feet (metres)	36.5 (11.1)
Draught, feet (metres)	13.8 (4.2)
Guns, surface	1—4 in (102 mm)
Guns, AA	3—40 mm
Boilers	2 three-drum type
Main engines	Triple expansion; 5 500 ihp; 2 shafts
Speed, knots	20
Radius, miles	6 000 at 12 knots
Oil fuel, tons	585
Complement	160

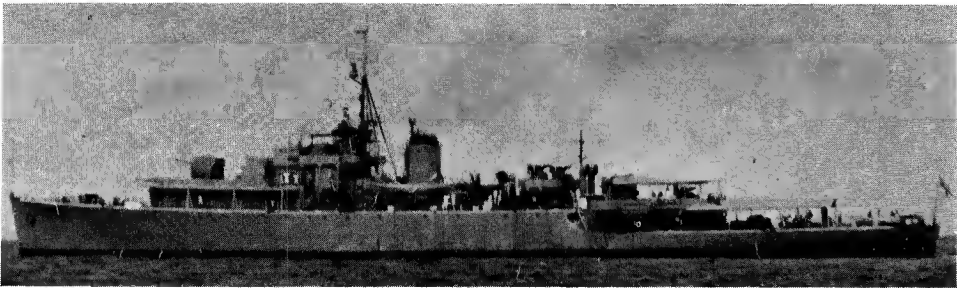
Acquired by Israel in 1950 and sold by Israel to Ceylon in 1959. Guns above replaced 3—4.7 inch, 8—20 mm in 1965.
Sister ship *Mahasena* (ex-*Mivtakh*, ex-Canadian *Violetta*, ex-HMCS *Orkney*) was sold early in June 1964 to a Hong Kong shipbreaker.

Name
GAJABAHU (ex-*Misnak*, ex-HMCS *Hallowell*)

No.
F 232

Builders
Canadian Vickers Ltd, Montreal

Launched
8 Aug 1944



GAJABAHU

1967, Royal Ceylon Navy, Official

PATROL BOATS

9 New Construction

Displacement, tons	15
Dimensions, feet	45.5 × 12 × 3
Main engines	2 boats: Thornycroft K6SMI engines; 500 bhp = 25 knots 7 boats: General Motors 6-71 Series; 560 bhp = 25 knots

Fast twin screw motor launches built by Thornycroft (Malaysia) Limited in Singapore for the Ceylon Navy. The hulls are of hard chine type with double skin teak planking. Equipped as patrol boats with radar, radio, searchlight etc. Two ordered in 1965 and completed in 1966. Seven ordered in 1966 and completed in 1967.



PC 97

1967, Royal Ceylon Navy, Official

HYDROFOIL CRAFT

1 Short Type.

Dimensions, feet	22.2 × 9.9 hull; 10.2 oa. Depth over side moulded: 3; Draught at anchor: 3.7; Draught at speed: 1.7, official figures.
Main engines	2 Volvo Penta Aquamatic 100 hp engines. Total 200 hp = 40 knots

A new type of short hydrofoil craft added to the Navy List in 1964.



HYDROFOIL CRAFT

1964, Royal Ceylon Navy, Official

DISPOSALS OF ESCORT MINESWEEPERS. *Parakrama* (ex-HMS *Pickle*) was sold in June 1964 to a Hong Kong scrapyard, and *Vijaya* (ex-HMS *Flyingfish*, ex-*Tillsonburg*) was returned to Britain.
DISPOSAL OF SEAWARD DEFENCE BOAT. *Kotiya* (ex-HMS *Doxford*) sank in Trincomalee Harbour during the cyclone of 22 Dec 1964, and was disposed of after salvaging.
800M DEFENCE VESSEL. *Baron* was purchased from Britain by the Colombo Port Commission (particulars and photographs in the 1958-59 and 1959-60 editions).

2 "Hansaya" Class

HANSAYA

Displacement, tons	36
Dimensions, feet	63.5 pp; 66 oa × 14 × 4
Main engines	3 General Motors diesels; 450 bhp = 16 knots

"Hansaya" class long patrol boats built for the Royal Ceylon Navy at Venice by the Korody Marine Corporation.



LIHINIYA

1967, Royal Ceylon Navy, Official

4 "Seruwa" Class

DIYAKAWA

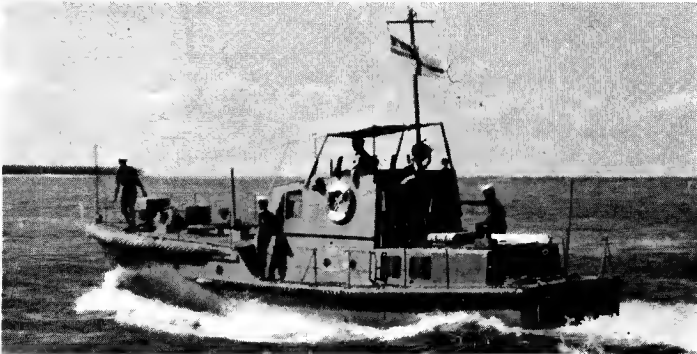
KORAWAKKA

SERUWA

TARAWA

Displacement, tons	13
Dimensions, feet	46 pp; 48 oa × 12 × 3
Main engines	2 Foden FD.6 diesels; 240 bhp = 15 knots

"Seruwa" class short patrol boats. A photograph of *Diyakawa* appears in the 1957-58 to 1959-60 editions, and of *Korawakka* in the 1964-65 and 1965-66 editions



SERUWA

1967, Royal Ceylon Navy, Official

TUG

ALIYA (ex-*Adept*, ex-*Empire Barbara*)

Displacement, tons	503 full load
Dimensions, feet	105 × 26.5 × 12.8
Main engines	Triple expansion; 850 ihp = 10 knots

Built by Cochrane & Sons Ltd, Selby, Yorks, England. Transferred from Great Britain. Decommissioned in 1964 to be sold, but this intention was rescinded. She was re-commissioned in 1966, and underwent major refit in 1967.

CHILE

Administration

Minister of National Defence:
Señor Juan de D. Carmona

Commander-in-Chief of the Navy:
Admiral Ramon Barros

Chief of the Naval Staff:
Rear-Admiral Raul Montero

Diplomatic Representation

Chief of the Chilean Naval Mission in Great Britain and Naval Attaché in London:
Captain J. Thornton

Chief of the Chilean Naval Mission in USA and Naval Attaché in Washington:
Rear-Admiral René Roman

Personnel

1967: 15,000 (1,000 officers and 14,000 men)

Strength of the Fleet

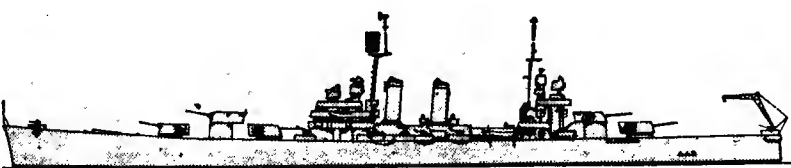
- 2 Submarines (Diesel Powered)
- 2 Cruisers
- 4 Destroyers
- 1 Frigate
- 2 Corvettes
- 4 Motor Torpedo Boats
- 30 Support Ships and Service Craft

Mercantile Marine

Lloyd's Register of Shipping
136 vessels of 289,531 tons gross

Silhouettes

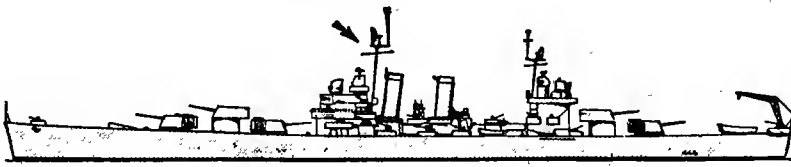
Scale: 150 feet = 1 inch



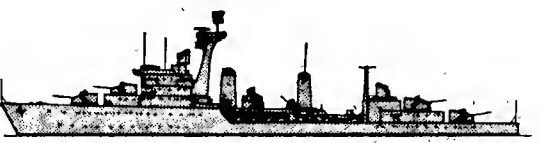
PRAT



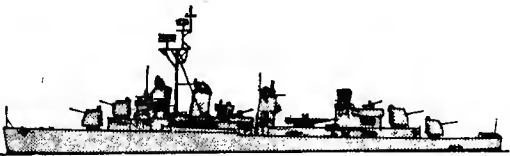
RIVEROS



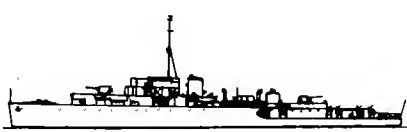
O'HIGGINS



WILLIAMS



BLANCO ENCALADA, COCHRANE



CAVODONGA



CASMA, CHIPANA

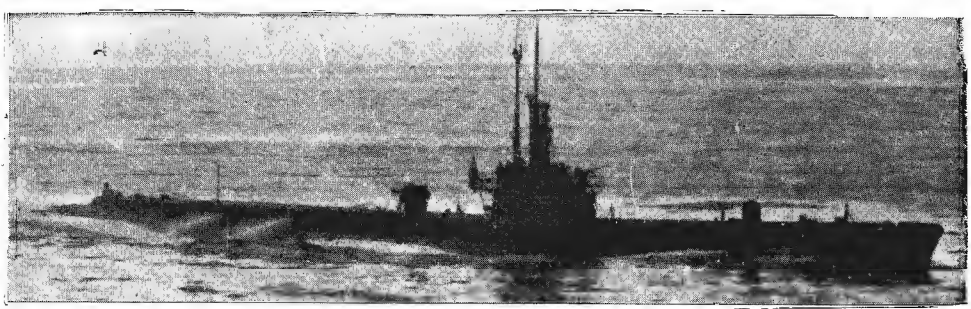
SUBMARINES

Name	No.	Builders	Launched	Completed
SIMPSON (ex-USS Spot, SS 413)	SS 21	Mare Island Navy Yard	20 May 1944	3 Aug 1944
THOMSON (ex-USS Springer, SS 414)	SS 22	Mare Island Navy Yard	3 Aug 1944	18 Oct 1944

2 Ex-U.S. "Balao" Class

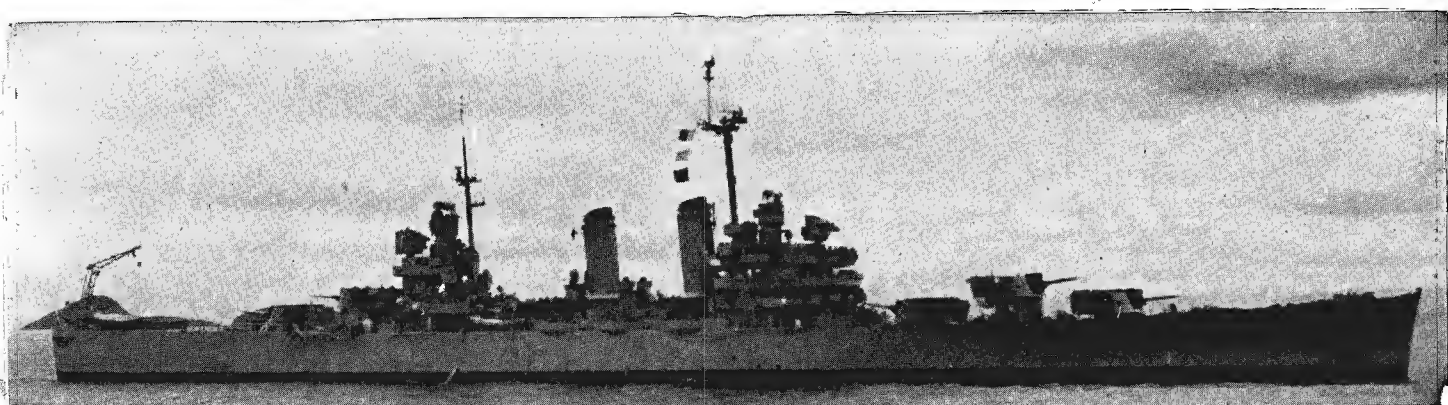
- Displacement, tons: 1 526 standard; 1 816 surface; 2 425 submerged
- Length, feet (metres): 311 6 (95 0)
- Beam, feet (metres): 27 (8 2)
- Draught, feet (metres): 17 (5 2)
- Torpedo tubes: 10—21 in (533 mm), 6 bow and 4 stern
- Main engines: 6 500 hp GM 2-stroke diesels; 4 610 hp electric motors
- Speed, knots: 20 on surface, 10 submerged
- Radius, miles: 12 000 at 10 knots
- Oil fuel (tons): 300
- Complement: 80

Thomson was transferred at San Francisco, Calif., on 23 Jan 1961. Simpson was transferred end of 1961.



THOMPSON

1962, Chilean Navy, Official



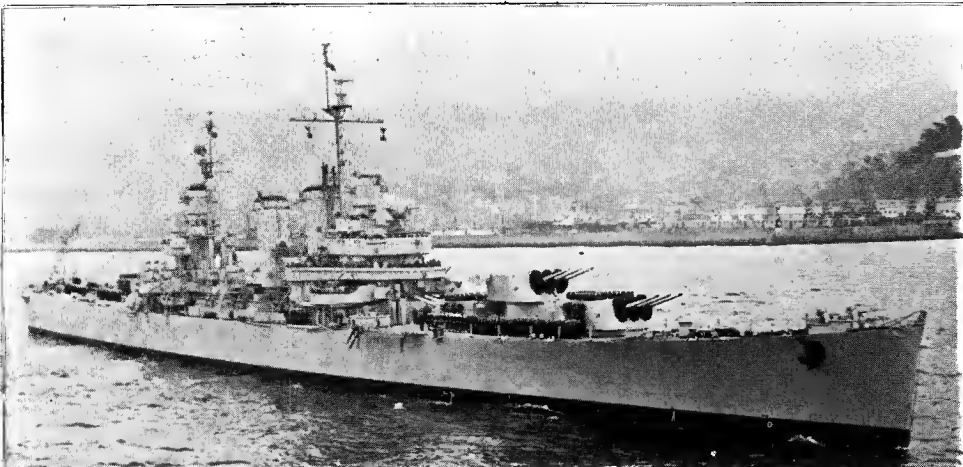
PRAT (see next page)

CRUISERS (Cruceros)

Name	No.	Builders	Laid down	Launched	Completed
O'HIGGINS (ex-USS Brooklyn, CL 40)	CL 02	New York Navy Yard	12 Mar 1935	30 Nov 1936	18 July 1938
PRAT (ex-USS Nashville, CL 43)	CL 03	New York S.B. Corp.	24 Jan 1935	2 Oct 1937	25 Nov 1938

2 "Prat" Class
(Ex-U.S. "Brooklyn" Class)

Displacement, tons	
O'Higgins	9 700 standard; 13 000 full load
Prat	10 000 standard; 13 500 full load
Length, feet (metres)	608·3 (185·4) oa
Beam, feet (metres)	69 (21·0)
Draught, feet (metres)	24 (7·3) max
Aircraft	2 Helicopters (see Hangar notes)
Guns, surface	15—6 in (153 mm) 47 cal (5 triple); 8—5 in (127 mm) 25 cal (single)
Guns, AA	28—40 mm; 24—20 mm
Armour, inches (mm)	Belt 4 in—1½ in (102—38); Decks 3 in+2 in (76+51); Turrets 5 in—3 in (127—76); C.T. 8 in (203)
Boilers	8 Babcock & Wilcox Express type
Main engines	Westinghouse geared turbines 100 000 shp; 4 shafts
Speed, knots	32·5
Range, miles	14 500 at 15 knots
Oil fuel (tons)	2 100
Complement	888 to 975 (peace)



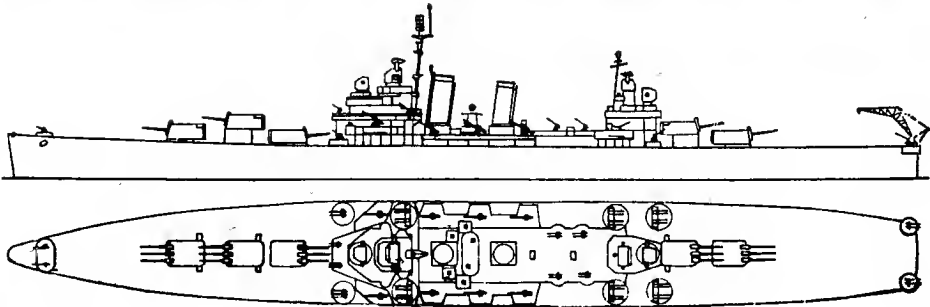
O'HIGGINS

1962, Chilean Navy, Official

Former "light" cruisers of the US "Brooklyn" Class. Purchased from the United States in 1951 at a price representing 10 per cent of their original cost (\$37 000 000) plus the expense of reconditioning them.

HANGAR. The hangar in the hull right aft could accommodate 6 aircraft if necessary together with engine spares and duplicate parts, though 4 aircraft was the normal capacity. The existence of this hangar resulted in a very wide and nearly flat counter and high freeboard aft and also gave the after guns higher command. Above the hangar two catapults were mounted as far outboard as possible, and a revolving crane was placed at the stern extremity overhanging the aircraft hatch.

DRAWING. Port elevation and plan. Scale 128 feet = 1 inch.



DESTROYERS (Destructoros)

2 "Almirante" Class

Name	No.	Builders	Laid down	Launched	Completed
RIVEROS	DD 18	Vickers-Armstrongs Ltd, Barrow	12 Apr 1957	12 Dec 1958	31 Dec 1960
WILLIAMS	DD 19	Vickers-Armstrongs Ltd, Barrow	20 June 1956	5 May 1958	26 Mar 1960

Displacement, tons	2 730 standard; 3 300 full load
Length, feet (metres)	402 (122·5) oa
Beam, feet (metres)	43 (13·1)
Draught, feet (metres)	13·3 (4·0)
Missiles, AA	Quadruple launcher for "Seacat"
Guns, AA	4—4 in (102 mm); 6—40 mm
A/S	2 Squid 3-barrelled DC mortars
Torpedo tubes	5—21 in (533 mm) quintupled
Boilers	2 Babcock & Wilcox
Main engines	Parsons Pametrada geared turbine 54 000 shp; 2 shafts
Speed, knots	34·5
Range, miles	6 000 at 16 knots
Complement	266

Ordered in May 1955. Layout and general arrangements are conventional. Bunks fitted for entire crew.

OPERATIONAL. The Operations Room and other similar spaces are air-conditioned. There are twin rudders for exceptional manoeuvrability. The ventilation and heating systems have been designed to suit the Chilean coastline, extending from the tropics to Cape Horn. The latest type of warship radar is fitted, specially developed for these ships to work in conjunction with new fire control systems developed by Vickers-Armstrongs.

APPEARANCE. Now that Williams has a lattice instead of a pole mainmast both ships are practically identical.

CONSTRUCTION. Riveros was completed by Dec 1960, but she was not handed over to Chile until 16 Feb 1962.

MISSILES. British "Seacat" radar controlled short range surface-to-air weapon installations were fitted at the Chilean Navy Yard at Talcahuano in 1964.

GUNNERY. The main armament is disposed in four single mountings, two superimposed forward and two aft. The 4-inch guns are entirely automatic with a range of 12 500 yards (11 400 metres) and an elevation of 75 degrees.

ELECTRICAL. The electrical system is on alternating current. Galleys are all electric. There is widespread use of fluorescent lighting. Degassing cables are fitted.

PHOTOGRAPHS. A photograph of Williams with pole mainmast appears in the 1960-61 to 1965-66 editions.



RIVEROS

1962, Wright & Logan

Destroyers—continued

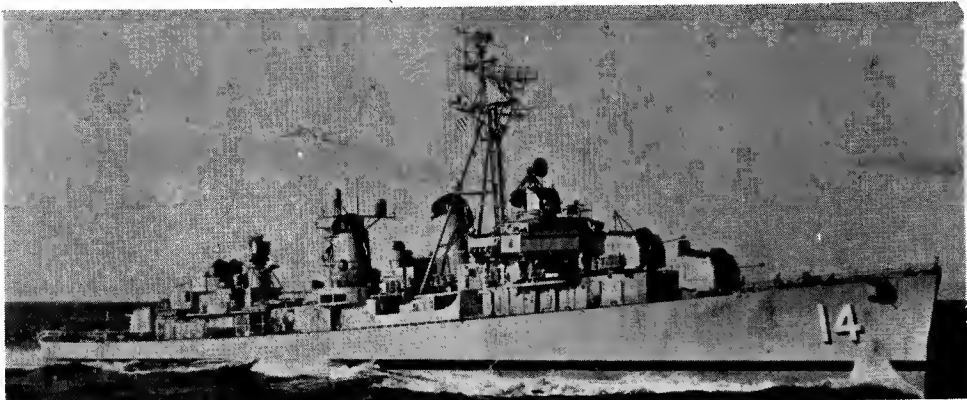
Name
BLANCO ENCALADA (ex-USS <i>Wadleigh</i> DD 689)
COCHRANE (ex-USS <i>Rooks</i> , DD 804)

No.	Builder
DD 14	Bath Iron Works Corp'n, Bath
DD 15	Todd Pacific Shipyards

Launched	Completed
7 Aug 1943	19 Oct 1943
6 June 1944	2 Sep 1944

2 Ex-U.S. "Fletcher" Class

Displacement, tons	2 100 standard; 2 750 full load
Length, feet (metres)	376.5 (110.5) oa
Beam, feet (metres)	39.5 (12.0)
Draught, feet (metres)	18 (5.5) max
Guns, dual purpose	4—5 in (127 mm) 38 cal.
Guns, AA	6—3 in (76 mm) 50 cal.
Torpedo tubes	5—21 in (quintupled)
A/S	2 Hedgehogs; 2 side launching torpedo racks, 1 DC rack, 6 "K" DCT
Boilers	4 Babcock & Wilcox
Main engines	2 GE geared turbines
	60 000 shp; 2 shafts
Range, miles	6 000 at 15 knots
Oil fuel (tons)	650
Speed, knots	35
Complement	250 (14 officers, 236 men). Accommodation for 324 (24 officers, 300 men)



BLANCO ENCALADA

1966, A. Ross

Former United States destroyers of the "Fletcher" class. Transferred to Chile under the Military Aid Program in 1963.

PHOTOGRAPHS. A port bow surface view of *Blanco Encalada* with initial B on bows appears in the 1963-64 and 1964-65 editions.

TRANSFERS. It was reported in 1966 that three more destroyers were scheduled to be transferred from the United States Navy to the Chilean Navy under a new transfer law signed by the President of the United States in 1966 whereby the United States is lending or donating warships to friendly nations. The ships were to have been refitted and modernised and adapted to Chilean requirements before transfer to the new flag.

But preference appears to have been given to the purchase from the United States Navy in Nov 1966 of four destroyer escort transports, namely *Daniel T. Griffin*, APD 38 (ex-DE 54), *Jack C. Robinson*, APD 72 (ex-DE 671), *Joseph E. Campbell*, APD 49 (ex-DE 70) and *Odum*, APD 71 (ex-DE 670), transferred for service in the Chilean Navy in 1967 (see under Transports on page 53).

DISPOSALS. Of the six destroyers of the "Serrano" class, all built by John Thornycroft & Co Ltd, Southampton, in 1927-29, *Hyatt*, *Orella*, *Riquelme* and *Serrano* were stricken from the Navy List in Jan 1963, and *Aldea* and *Videla* in 1958.



COCHRANE

1965, Chilean Navy, Official

FRIGATE (Fragata)

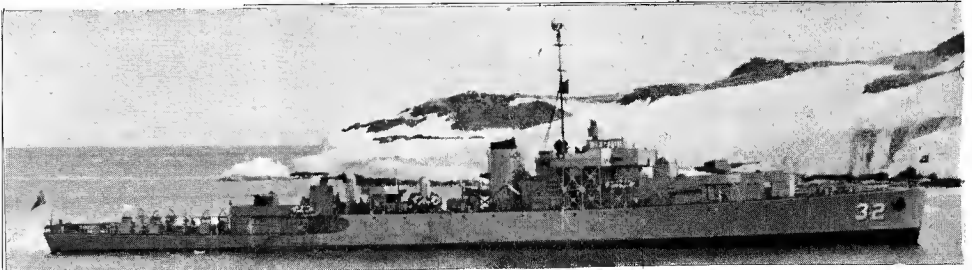
1 Ex-Canadian "River" Class

Displacement, tons	1 455 standard; 2 125 full load
Length, feet (metres)	283 (86.3) pp; 295.5 (91.1) wl
	301.1 (91.8) oa
Beam, feet (metres)	36.5 (11.1)
Draught, feet (metres)	13.2 (4.0)
Guns, AA	2—4 in (102 mm), 10—20 mm
A/S weapons	4 DCT
Boilers	2 three-drum type
Main engines	2 sets triple expansion
	5 500 ihp, 2 shafts
Speed, knots	20
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	646
Complement	140

Purchased from the Royal Canadian Navy in May 1946.

DISPOSALS. *Baquedano* (ex-*Esmeralda*, ex-HMCS *Glace Bay*, ex-Lauzon) and *Iquique* (ex-HMCS *Joliette*) were officially withdrawn from service in 1965.

Name	No.	Builders	Launched	Completed
COVADONGA (ex-Seacliffe, ex-Megantio)	PF 32	Davie Shipbuilding, Lauzon	8 July 1944	26 Sep 1944



COVADONGA

1965, Chilean Navy, Official

CORVETTES

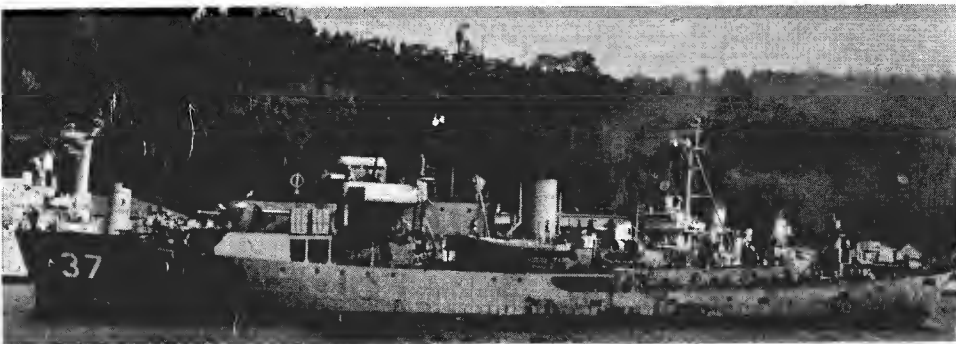
2 Ex-Canadian "Flower" Class

Displacement, tons	1 060 standard; 1 340 full load
Length, feet (metres)	193 (58.9) pp; 197 (60.1) wl
	205 (61.5) oa
Beam, feet (metres)	33 (10.0)
Draught, feet (metres)	13 B (4.2)
Guns, surface	1—4 in (102 mm)
Guns, AA	6—20 mm
A/S weapons	4 DCT
Boilers	2 three-drum type
Main engines	Triple expansion 2 750 ihp
Speed, knots	16 max
Radius, miles	7 000 at 10 knots
Oil fuel (tons)	350
Complement	66

Purchased from Canada in 1946.

Sister ship *Papudo* (ex-HMCS *Thorlock*) PG 39 was withdrawn from service in 1965.

Name	No.	Builders	Launched	Completed
CASMA (ex-Stellarton)	PG 37	Morton Ltd, Quebec City, P.Q.	27 Apr 1944	29 Sep 1944
CHIPANA (ex-Strathroy)	PG 38	Midland Shipyards Ltd, Midland, Ont.	15 June 1944	20 Nov 1944



CASMA

1966, A. Ross

PATROL VESSELS

PC 1646

Authorised for construction in the USA for transfer to Chile under MAP.

	<i>Pennant No.</i>	<i>Launched</i>
LAUTARO (ex-USS <i>ATA 122</i>)	PP 62	27 Nov 1942
LIENTUR (ex-USS <i>ATA 177</i>)	PP 60	5 June 1944

Displacement, tons	534 standard; 835 full load
Dimensions, feet	134.5 wl; 143 oa × 33 × 13.2 max
Guns	1—3 in AA; 2—20 mm AA
Main engines	GM diesel-electric; 1 500 shp = 12.5 knots
Oil fuel, tons	187
Complement	33

Former United States Navy auxiliary ocean tugs of the ATA type ("Maricopa" class), originally ocean rescue tugs (ATRs), transferred to the Chilean Navy and reclassified as patrol vessels. Launch dates above. Built by Levingstone Shipbuilding Co, Orange, Texas, USA.
LOSS. Sister ship *Leucoton* (ex-USS *ATA 200*) PP 61 ran aground on a sand bank on 15 Aug 1965 and was lost as a result of a heavy coastal storm during salvage operations.



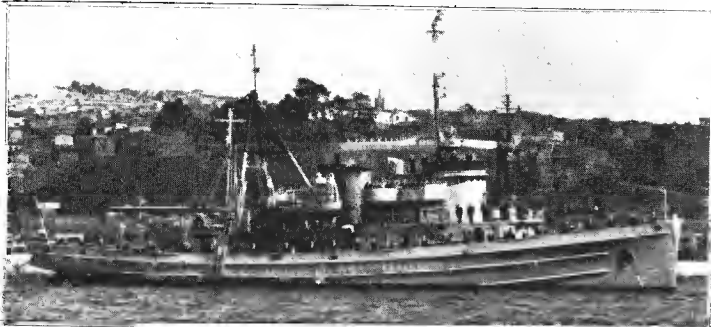
LAUTARO 1964, Chilean Navy, Official

SURVEY SHIP

YELCHO (ex-USS *Tekesta*, ATF 93) Pennant No. AGS 64

Displacement, tons	1 235 standard; 1 675 full load
Dimensions, feet	195 wl; 205 oa × 38.5 × 15.3 max
Guns	1—3 in, 4—40 mm AA; 2—20 mm AA
Main engines	4 diesels with electric drive; 3 000 bhp = 16.5 knots
Complement	85

Former United States fleet ocean tug of the ATF type ("Apache" class) fitted with powerful pumps and other salvage equipment. *Yelcho* was built by Commercial Iron Works, Portland, Oregon, laid down on 7 Sep 1942, launched on 20 Mar 1943, completed on 16 Aug 1943, and loaned to Chile by the USA on 15 May 1960, having since been employed as Antarctic research ship and surveying vessel.
LOSS. Sister ship *Janequeo* (ex-USS *Potawatomi*, ATF 109) AGS 65 sank with all hands on 15 Aug 1965 during the salvage operations of *Leucoton*, see above.



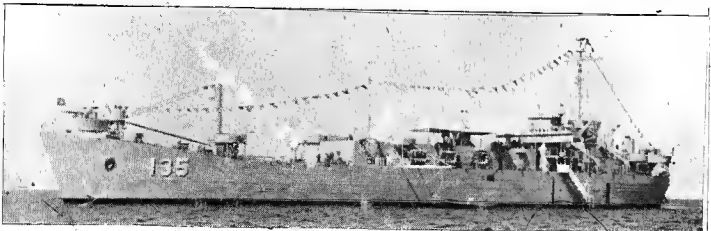
YELCHO 1963, Chilean Navy, Official

HELICOPTER SUPPORT SHIP
(*Barcaza Porta-Helicoptero*)

AGUILA ARV 135 (ex-USS *Aventinus*, ARVE 3, ex-LST 1092)

Displacement, tons	1 625 light; 4 100 full load
Dimensions, feet	316 wl; 328 oa × 50 × 11.2
Guns	8—40 mm AA
Main engines	GM diesels; 2 shafts; 1 800 bhp = 11.6 knots

Former United States aircraft repair ship (engine). Built by American Bridge Co, Ambridge, Pa. Laid down on 8 Jan 1945, launched on 24 Mar 1945, and completed on 19 May 1945. Transferred to the Chilean Navy by USA in 1963 under the Military Aid Program. Also used as destroyer tender and submarine repair ship.
There is also *Nutilla*, ARD 132, former US auxiliary repair dry dock *ARD 32*, leased to Chile on 15 May 1960: 5 200 tons displacement, 492 × 84 × 5.7 to 33.2 feet.



AGUILA 1965, Chilean Navy, Official

MOTOR TORPEDO BOATS

FRESIA 81 GUACOLDA 80 QUIDORA 82 TEGUALDA 83

Displacement, tons	134
Dimensions, feet	118.1 × 18.4 × 7.2
Guns	2—40 mm AA
Tubes	4—21 in
Main engines	Diesels; 2 shafts; 4 800 bhp = 32 knots
Radius, miles	1 500 at 15 knots
Complement	20

Built in Spain at Cadiz to German Lürssen design. *Fresia* and *Guacolda* were delivered on 9 Dec 1965 and 30 July 1965, respectively. *Quidora* and *Tegualda* in 1966.



QUIDORA 1967

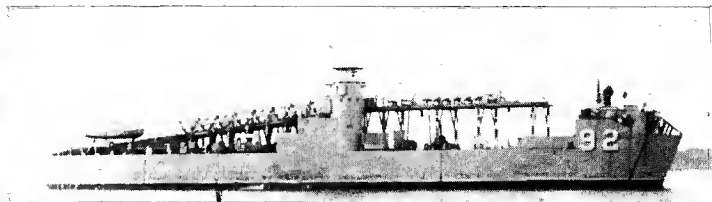
LANDING CRAFT (*Barcazas*)

ASPIRANTE GOICOLEA (ex-USS *LSM 400*) LSM 89
ASPIRANTE MOREL (ex-USS *Aloto*, *LSM 444*) LSM 92

Displacement, tons	743 standard; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa × 34.5 × 7.3
Main engines	Diesel; 2 shafts; 2 800 bhp = 12 knots
Oil fuel (tons)	60
Radius, miles	2 500
Complement	60

Former United States medium landing ships launched in 1945. *Aspirante Morel* (ex-*Aloto*) was leased to Chile on 2 Sep 1960 at Pearl Harbour to replace the older *LSM* of the name.

Sister ships, *Aspirante Morel* (ex-USS *LSM 417*) was withdrawn from service in 1958, *Guardamarine Contreras* (ex-USS *LSM 113*) in 1959, and *Aspirante Izaza* (ex-USS *LSM 259*) in 1965.



ASPIRANTE MOREL 1965, Chilean Navy, Official

OROMPELLO LSM 94

Displacement, tons	290 light; 750 full load
Dimensions, feet	138 wl; 145 oa × 34 × 12.8
Main engines	Diesels; 2 shafts; 900 bhp = 10.5 knots
Oil fuel (tons)	77
Radius, miles	2 900
Complement	20

Built for the Chilean Government by Dade Drydock Corporation, Miami, Florida. Transferred on 15 Sep 1964.

GRUMETE BOLADOS LCU 95 GRUMETE DIAZ LCU 96 GRUMETE TELLEZ LCU 93

Displacement, tons	143 to 160 light; 309 to 329 full load
Dimensions, feet	105 wl; 119 oa × 32.7 × 5 max
Main engines	Diesel; 3 shafts; 675 bhp = 10 knots
Oil fuel (tons)	11
Radius, miles	700 at 7 knots
Complement	12

Former United States tank landing craft of the LCT (6) type. *Grumete Bolados*, *Grumete Diaz* and *Grumete Tellez* are ex-LCU 1273, ex-LCU 1396 and ex-LCU 1458. Launched in 1944. Transferred in 1960.

Of the six landing craft of the "Cabo Bustos" class, *Cabo Bustos* was converted into a harbour ammunition barge and *Eduardo Llanos* and *Soldado Canaves* were officially withdrawn from service in 1965; and sister ships *Grumete Bolados*, *Grumete Diaz* and *Grumete Tellez* were withdrawn from service in 1959.

TRANSPORTS

ORELLA APD 27 (ex-USS *Jack C. Robinson*, APD 72, ex-DE 671)
RIQUELME APD 28 (ex-USS *Joseph E. Campbell*, APD 49, ex-DE 70)
SERRANO APD 26 (ex-USS *Odum*, APD 71, ex-DE 670)
URIBE APD 29 (ex-USS *Daniel T. Griffin*, APD 38, ex-DE 54)

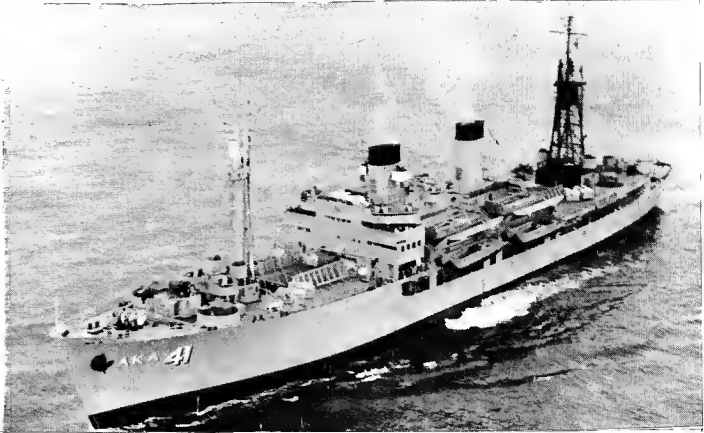
Displacement, tons 1 400 standard; 2 130 full load
Dimensions, feet 300 wl; 306 oa × 37 × 12 6
Guns 1—5 in 38 cal dp; 6—40 mm AA —
Main engines GE turbo-electric; 2 shafts; 12 000 shp = 23 6 knots
Boilers 2 "D" Express

Former US high speed transports (modified destroyer escorts) purchased 15 Nov 1966, except *Uribe*, 17 Jan 1967.

PRESIDENTE PINTO (ex-*Zenobia*, AKA 52) Pennant No. AKA 41

Displacement, tons 4 100 standard; 7 080 full load
Dimensions, feet 400 wl, 426 oa × 58 × 16
Guns 1—4·7 in; 2—3 in; 8—40 mm
Main engines Turbo-electric; 2 shafts; 6 000 shp = 17 knots
Boilers 2 Wickes
Complement 225

Former United States attack cargo ship of the AKA type. Built by Walsh-Kaiser. Launched on 6 July 1945. Purchased from the US Navy in Nov 1946. Sister ship *Presidente Errazuriz* (ex-*Xenia*, AKA 51), AP8 40 was removed from the List in 1962.

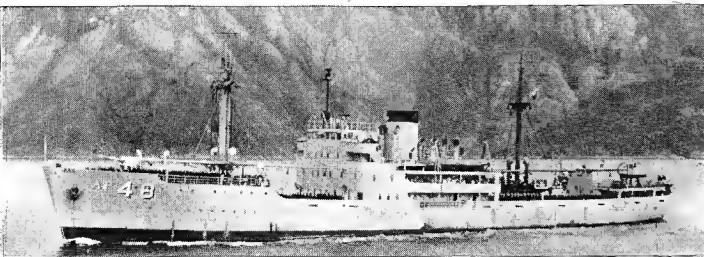


PRESIDENTE PINTO 1965, Chilean Navy, Official

ANGAMOS Pennant No. AP 48

Displacement, tons 3 800 standard
Dimensions, feet 314 pp; 340 oa × 46 × 19 8
Main engines Triple expansion; 2 200 ihp = 12 knots
Coal 575 tons
Complement 72 + 74 passengers or troops

Built at Aalborg. Laid down on 5 Apr 1940. Launched in 1941. Delivered in Feb 1946. Named after the naval victory which, on 8 Oct 1879, virtually decided the issue of the war against Peru and Bolivia.

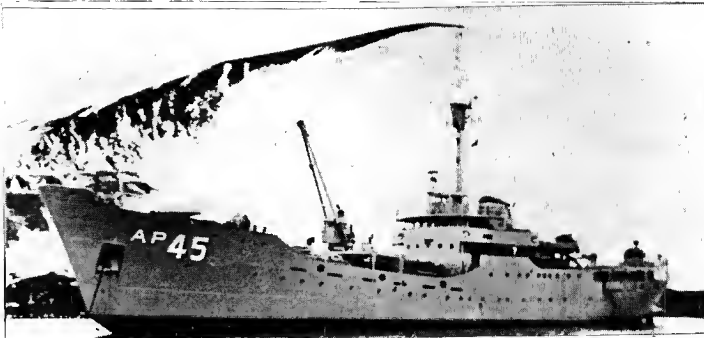


ANGAMOS 1965, Chilean Navy, Official

PILOTO PARDO Pennant No. AP 45

Displacement, tons 1 250 light; 2 000 standard; 3 000 full load
Dimensions, feet 269 × 39 × 15
Aircraft 1 helicopter
Main engines 2 diesel-electric; 2 000 hp = 14 knots
Complement 44 (plus 24 passengers)

Built by Haarlemsche Scheepsbouw Mij, Haarlem, Netherlands. Antarctic patrol ship, transport and research vessel with reinforced hull to navigate in ice. For special service in Southern Ocean. Officially listed as transport. Delivered in 1959.



PILOTO PARDO 1965, Chilean Navy, Official

OILERS

ARAUCANO

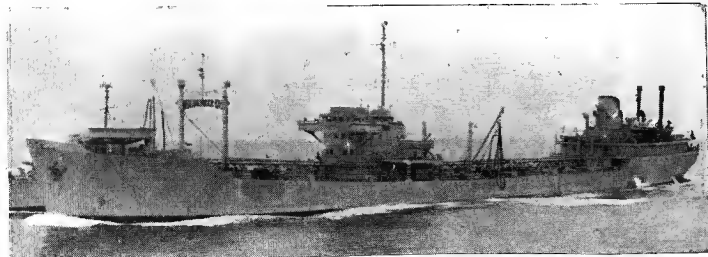
Displacement, tons 17 300
Measurement, tons 18 030 deadweight
Dimensions, feet 497 6 × 74 9 × 28 8
Main engines B and W diesels; 10 800 bhp = 14 5 knots (17 on trials)
Range, miles 12 000

New naval tanker built by Burmeister & Wain, Copenhagen, Denmark. Sailed on 19 Jan 1967 from Copenhagen to Chile.

ALMIRANTE JORGE MONTT Pennant No. AO 52

Displacement, tons 9 000 standard; 17 500 full load
Measurement, tons 11 800 gross; 17 750 deadweight
Dimensions, feet 548 × 67 5 × 30
Main engines Rateau Bretagne geared turbine; 1 shaft; 6 300 shp = 14 knots
Boilers 2 Babcock & Wilcox
Radius, miles 16 500 at 14 knots

Naval squadron supply tanker. Built by Ateliers et Chantiers de la Seine Maritime, Le Trait, France. Laid down in 1954. Launched on 14 Jan 1956. Completed in Mar 1956.



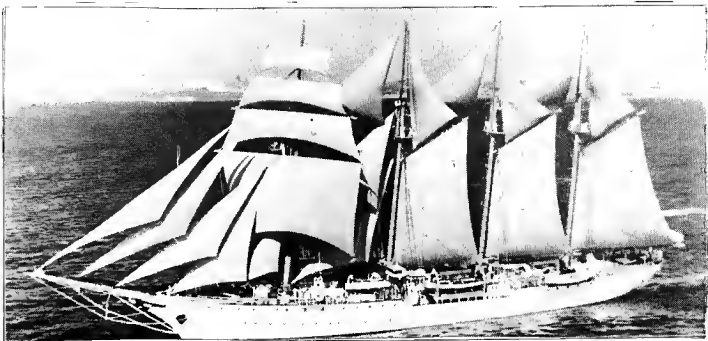
ALMIRANTE JORGE MONTT 1962, Chilean Navy, Official

TRAINING SHIP (*Buque Escuela*)

ESMERALDA (ex-*Don Juan de Austria*) Pennant No. BE 43

Displacement, tons 3 040 standard; 3 673 full load
Dimensions, feet 308 8 oa; 260 pp × 43 × 23 max.
Guns 2—57 mm
Sail area Total 26 910 sq feet
Main engines 1 Fiat auxiliary diesel 1 shaft; 1 400 bhp = 11 knots
Range, miles 8 000
Complement 271 plus 80 cadets

Four-masted schooner completed in 1952. Built in Spain by the Echevarrieta Yard, Cadiz, and originally intended for the Spanish Navy. Transferred to Chile on 12 May 1953. Near sister ship of *Juan Sebastian de Elcano* in the Spanish Navy. Similar to the Brazilian training ship *Almirante Sadanha*. Replaced transport *Presidente Pinto* as training ship.



ESMERALDA 1965, Chilean Navy, Official

TUGS

3 "Cabrales" Class

CABRALES ATA 71 **COLOCOLO** ATA 73 **GALVARINO** ATA 74

Displacement, tons 790
Dimensions, feet 126 5 × 27 × 12 mean
Main engines Triple expansion; 1 050 shp = 11 knots
Fuel, tons 130 coal (except *Cabrales*, 135 oil)

All built by Bow, McLachlan & Co, Paisley. *Cabrales* was launched on 24 Oct 1929, and converted to oil firing in 1959. These ships are classed as coastguard vessels. A photograph of *Galvarino* appears in the 1953-54 to 1957-58 editions. Of two sister ships *Janequeo* was withdrawn from service in 1958, and *Sobenes* in 1965.

HUEMUL (ex-*Vilumilla*) Pennant No. YT 124

Displacement, tons 320
Dimensions, feet 100 wl × 22 × 13
Main engines Triple expansion; 1 050 ihp = 11 knots
Boilers 1
Coal capacity, tons 35

Launched at Valdivia in 1937. Sister ship *Contramaestre Brito* (ex-*Pelantaro*), was lost.

ANCUD (YT 104) **MOCTEZUMA** (YT 108) **REYES** (YT 120)
CAUPOLICAN (YT 127) **MONREAL** (YT 105) **UGARTE** (YT 107)
CORTEZ (YT 128)

Fortuna (YT 123) and *Galvez* (YT 102) were withdrawn from service in 1965. *Yagan* (YT 126) was lost in 1964 while assisting a merchant ship during a storm.

PEOPLE'S REPUBLIC OF CHINA

Administration	158 Motor Torpedo Boats/Fast Patrol Boats	Personnel
Commander-in-Chief of the Navy:	81 Motor Gunboats/River Gunboats	1967: 126 000 officers and men, including
Vice-Admiral Hsiao	19 Minesweepers	16 000 naval air force and 28 000
Strength of the Fleet	59 Amphibious Types/Landing Ships	marines.
34 Diesel Powered Submarines	49 Auxiliaries	
4 Destroyers	375 Miscellaneous Service Craft	
4 Destroyer Escorts (Frigates)	Pennant Numbers	Mercantile Marines
11 Frigate Escorts	Block numbering system:—	Lloyd's Register of Shipping:
28 Submarine Chasers (Patrol Vessels)	Submarines: 100 series; Major Surface Ships:	231 vessels of 669 299 tons gross
	200 series; Amphibious Ships: 300 series.	

SUBMARINES

2 "G" Class. Ballistic Missile Type	
Displacement, tons	2 350 surface; 2 800 submerged
Length, feet (<i>metres</i>)	320 (97.5)
Beam, feet (<i>metres</i>)	28 (8.5)
Draught, feet (<i>metres</i>)	22 (6.7)
Torpedo tubes	6—21 in (533 mm) forward
Main engines	3 diesels, total 6 000 hp (surface) Electric motors (submerged)
Speed, knots	17.6 on surface, 17 submerged
Radius, miles	22 700 surface cruising
Complement	86 (12 officers, 74 men)

Ballistic missile submarines of the Soviet "G" class. One built at Dairen in 1964, and another being completed there.



"G" class 1966, col. Breyer

4 "R" Class	4 Ex-Soviet "S-1" Class	3 Ex-Soviet "M-V" Class
111 112 113 114	S 400 S 401 S 402 S 403	M 201 M 202 M 203
Four submarines of the Soviet "R" class, of the above pennant numbers, are reported to have been lent or leased. See particulars in the USSR section.	Displacement, tons 780 standard; 840 surface; 1 050 submerged	Displacement, tons 350 surface; 420 submerged
21 Soviet "W" Class	Length, feet (metres) 256 (78.0)	Length, feet (metres) 167.3 (51.0)
Displacement, tons 1 050 standard; 1 300 surface; 1 600 submerged	Beam, feet (metres) 21 (6.4)	Beam, feet (metres) 16 (4.9)
Length, feet (metres) 245 (74.7) oa	Draught, feet (metres) 13 (4.0)	Draught, feet (metres) 12 (3.7)
Beam, feet (metres) 24 (7.3)	Guns, surface 1—3.9 in (100 mm)	Guns, AA 1—45 mm; 1 MG
Draught, feet (metres) 14 (4.3)	Guns, AA 1—45 mm	Torpedo tubes 2—21 in (533 mm)
Guns, dual purpose 2—25 mm	Torpedo tubes 6—21 in (533 mm)	Main engines 1 000 hp diesels (surface)
Torpedo tubes 6—21 in (533 mm); 4 forward, 2 aft (20 torpedoes or 40 mines)	Main engines 4 200 hp diesels (surface)	800 hp electric motors (submerged)
Main engines Diesel-electric; 2 shafts; 4 000 bhp diesels (surface); 2 500 hp electric motors (submerged)	Speed, knots 19 on surface; 8.5 submerged	Speed, knots 13 on surface; 10 submerged
Speed, knots 17 on surface, 15 submerged	Radius, miles 9 800 at 9 knots	Radius, miles 4 000 at 8.5 knots
Radius, miles 13 000 to 16 500	Oil fuel (tons) 105	Oil fuel (tons) 21
Complement 60	Complement 50	Complement 24

Medium size, streamlined, long range boats similar to those built in the Soviet Union. Equipped with snort. Fitted for minelaying. Assembled from Soviet components in Chinese yards between 1956 and 1964.

All launched in 1937-40. Particulars of individual boats vary slightly. Transferred from the USSR in 1954-55.

Designed for coastal operations, now used for training and instruction. Four were transferred from the USSR in 1954-55, but M 200 was deleted from the list in 1963.

DISPOSALS The two smaller submarines built for coastal operations, one of the ex-Soviet "M IV" class, and one of the ex-Soviet "M 1" class, latterly used only for training and instructions, were deleted from the list in 1963.

DESTROYERS

4 Ex-Soviet "Gordy" Class
ANSHAM CHANG CHUN FU CHUN
Displacement, tons 1 657 standard; 2 150 full load
Length, feet (metres) 357.7 (109.0) pp; 377 (114.9) oa
Beam, feet (metres) 33.5 (10.2)
Draught, feet (metres) 13 (4.0)
Guns, surface 4—5.1 in (130 mm)
Guns, AA 8—37 mm
A/S 8 DCT
Torpedo tubes 6—21 in (533 mm) tripled
Boilers 3-drum type
Main engines Tosi geared turbines
50 000 shp; 2 shafts
Speed, knots 36
Oil fuel (tons) 500
Complement 250



CHANG CHUN Hajime Fukaya

Of Odero-Terni-Orlando design. All launched in 1936-41. Fitted for minelaying. Two "Skoryi" class destroyers are also reported to have been acquired from USSR.

CRUISERS. The old cruiser *Kaganovitch* was reported to have been lent or leased by the USSR to the People's Republic of China. For particulars see USSR section.

The old light cruiser *Pei Ching* (ex-*Huang Ho*, ex-*Victory*, ex-*Chungking*, ex-HMS *Aurora*), is now a hulk. For particulars see 1959-60 and earlier editions.

FRIGATES

4 "Riga" Class Destroyer Escort Type		
CH'ENG TU KUEI LIN	KUEI YANG K'UN MING	
Displacement, tons 1 200 standard; 1 600 full load		Guns, AA 3—37 mm
Length, feet (metres) 295 (89.9) oa		A/S 4 DC projectors
Beam, feet (metres) 31.5 (9.6)		Torpedo tubes 3—21 in (533 mm); 3 torpedoes
Draught, feet (metres) 10 (3.0)		Boilers 2
Guns, dual purpose 3—3.9 in (100 mm) single mounts		Main engines Geared turbines
		24 000 shp; 2 shafts
		Speed, knots 28
		Oil fuel (tons) 300
		Complement 200

Built in China. First of the class, launched on 28 Apr 1956 at Hutang Shipyard, Shanghai, had light tripod mast, but was later converted with heavier mast and larger bridge as in the other three. Second vessel built by the same yard was launched on 26 Sep 1956. Both fitted with mine rails (mine capacity 50). Third vessel was built at Shanghai. Only four "Riga" class ships were built, the last in 1957 by Hutang Shipyard. Two of these ships have been redesigned with modified superstructure.

Frigates—continued

2 Ex-Japanese Escort Destroyer Types

HUI AN (ex-Shisaka)

Displacement, tons 940 standard; 1 020 full load
Length, feet (metres) 255 (77·7) wl; 258·5 (78·8) oa
Beam, feet (metres) 30 (9·1)
Draught, feet (metres) 10 (4·0)
Guns, surface 2—4·7 in (120 mm); 6 MG
Main engines 2 diesels; 4 200 bhp; 2 shafts
Speed, knots 19·5
Complement 150

Ex-Japanese "Ukuru" class escort destroyer. Launched in 1943. Completed in 1945. Rearmed in 1955.

CHANG PAI (ex-Japanese Oki, ex-Chinese Ku An)

Displacement, tons 870 standard; 1 020 full load
Length, feet (metres) 237·9 (72·5) pp; 250 (76·0) wl
255 (77·7) oa
Beam, feet (metres) 30 (9·1)
Draught, feet (metres) 10 (4·0)
Guns, surface 2—3·9 in (100 mm)
Guns, AA 2—45 mm
Main engines 2 diesels; 4 200 bhp; 2 shafts
Speed, knots 19·7
Complement 150



CHANG PAI

Hajime Fukaya

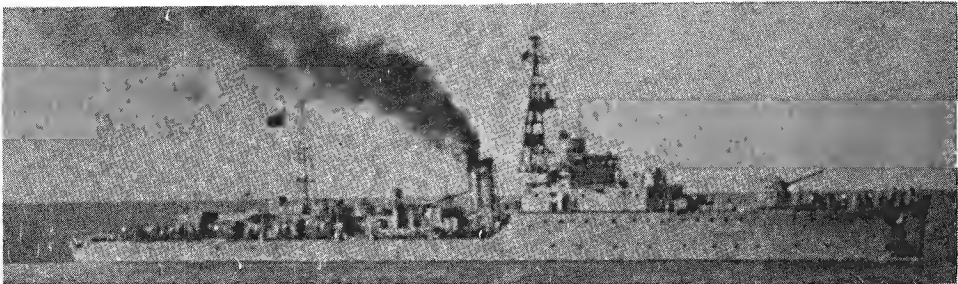
Ex-Japanese Type A or "Etorofu" class. Built by Uruga Dock Co Ltd. Laid down on 27 Feb 1942. Launched on 20 Oct 1942. Completed on 31 Mar 1943. Rearmed in 1955. One raked funnel, two pole masts with tripod bases. Sister ship of Lin An in Taiwan (National Republic of China) Navy.

Ex-Japanese Sloop (Gunboat) Type

NAN CHANG (ex-Chinese Chang Chi, ex-Japanese Uji)

Displacement, tons 950 standard; 1 206 full load
Length, feet (metres) 249·5 (76·1) pp; 257·5 (78·5) wl
264 (80·5) oa
Beam, feet (metres) 31 (9·4)
Draught, feet (metres) 8·7 (2·6)
Guns, surface 2—3·9 in (100 mm)
Guns, AA 2—3 in (76 mm); 4—20 mm
Boilers 2
Main engines 2 turbines; 4 600 shp; 2 shafts
Speed, knots 20·15
Radius, miles 3 460 at 14 knots
Complement 170

Former Japanese sloop or gunboat. Built at Sakurajima Works, Osaka. Launched on 25 Sep 1940. Completed in 1941. Rearmed in 1955.



NAN CHANG

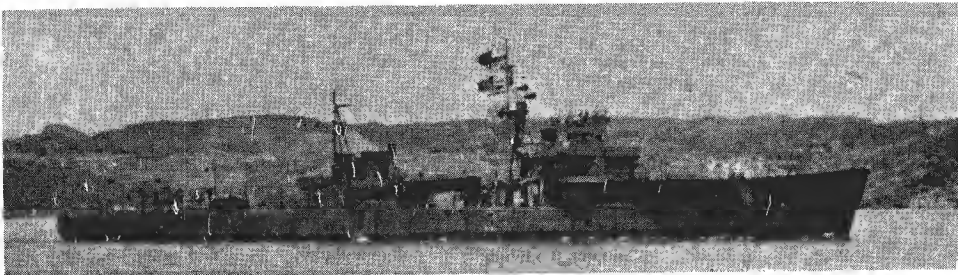
K. Long

5 Ex-Japanese Corvette Types

SHEN YANG (ex-Yuang An, ex-Mukden, ex-No. 81)

Displacement, tons 745 standard; 810 full load
Length, feet (metres) 206·7 (63·0) pp; 216·5 (66·0) wl;
221·5 (67·5) oa
Beam, feet (metres) 27·5 (8·4)
Draught, feet (metres) 9·5 (2·9)
Guns, surface 2—3·9 in (100 mm)
Guns, AA 4—37 mm
Main engines 2 diesels; 1 900 bhp; 2 shafts
Speed, knots 16·5
Radius, miles 6 500 at 14 knots
Complement 136

Ex-Japanese C or No. 1 Type. Built in 1944-45. Rearmed in 1955. Sister ship Chi An is now a hulk.

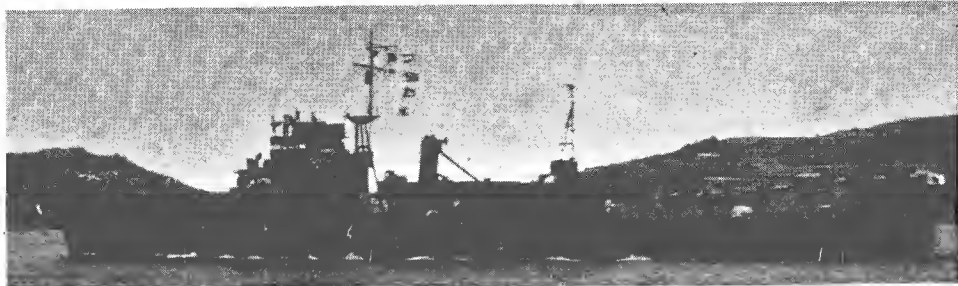


CHI NAN

Hajime Fukaya

CHANG SHA (ex-Chinese Chieh 12, ex-No. 118)	
CHI NAN (ex-Wei Hei, ex-Chieh 6, ex-No. 194)	
HSI AN (ex-Chinese Chieh 14, ex-Japanese No. 198)	
WU CHANG (ex-Chinese Chieh 5 ex-Japanese No. 14)	
Name	Chang Sha Hsi An
Builders	Kawasaki Mitsubishi, Sensha Zosen Co, Works Nagasaki
Laid down	B June 1944 17 Jan 1945
Launched	18 Oct 1944 26 Feb 1945
Completed	27 Dec 1944 31 Mar 1945

Displacement, tons 740 standard; 900 full load
Length, feet (metres) 213·2 (54·2) pp; 223 (56·7) wl;
228 (57·9) oa
Beam, feet (metres) 28·2 (8·6)
Draught, feet (metres) 10 (3·0)
Guns, surface 2—3·9 in (100 mm), or 2—4·7 (120 mm)
Guns, AA 3—3 in (76 mm), or 3 or 6—37 mm; 4—25 mm, or 3—20 mm
Main engines Steam turbine; 2 500 shp



CHANG SHA

Hajime Fukaya

Speed, knots 17·5
Radius, miles 4 500 at 14 knots
Complement 160

Ex-Japanese Type D or Kaibokan Class No. 2 Type. Thin trunked funnel amidships. Pole masts with tripod bases.

1 Ex-Canadian Corvette Type

KUANG CHOU (ex-Chinese Yuan Pei, ex-HMCS Bowmanville, ex-Nunney Castle)

Displacement, tons 1 100 standard; 1 580 full load
Length, feet (metres) 252 (76·8) oa

Beam, feet (metres) 36·7 (11·2)
Draught, feet (metres) 15·2 (4·6)
Guns, surface 2—5·1 in (130 mm)
Guns, AA 1—45 mm
Boilers 2 three-drum type
Main engines Triple expansion; 2 800 ihp
Speed, knots 16·5

Radius, miles B 400 at 10 knots
Oil fuel (tons) 480
Complement 100

Built by Wm Pickersgill & Sons, Ltd, Sunderland. Laid down on 12 Aug 1943. Launched on 26 Jan 1944. Completed in 8 Oct 1944.

2 Ex-British Corvette Types

KAI FENG (ex-SS Cloverlock, ex-HMS Clover)
LIN I (ex-SS Ziang Teh, ex-HMS Heliotrope, ex-USS Surprise)

Displacement, tons 1 020 standard; 1 280 full load
Length, feet (metres) 190 (57·9) pp; 205 (62·5) oa

Beam, feet (metres) 33 (10·1)
Draught, feet (metres) 14·5 (4·4)
Guns, surface 2—3·9 in (100 mm)
Guns, AA Kai Feng: 1—45 mm; 4—37 mm
Lin I: 2—37 mm
Boilers 2 S.E.
Main engines Triple expansion; 2 750 ihp
Speed, knots 16

Radius, miles 7 000 at 10 knots
Fuel (tons) 350 coal
Complement 78

Both built in 1940-41. Converted from merchant vessels by Chinese Republicans and re-armed. Existence of sister ship, former corvette, converted, ex-Coppercliffe (ex-Wan Lee, ex-Ta Lun) is doubtful.

PATROL VESSELS**2 Soviet "S.O.I." Class Submarine Chasers**

Displacement, tons	215
Dimensions, feet	138 × 20 × 7
Guns	4—25 mm (2 twin)
A/S weapons	4 five-barrelled depth charge mortars
Main engines	Diesel; Speed 28 knots

Two of this class reported to have been transferred from the USSR in 1960.

The six old former Soviet patrol vessels of the "Artilerist" class, and the three former British patrol trawlers of the "Isles" class were deleted from the list in 1967.

24 Soviet "Kronstadt" Class Submarine Chasers

PC 611	PC 612	PC 615	PC 618	PC 622
Displacement, tons	300			
Dimensions, feet	167.5 × 19.3 × 9			
Guns	1—3.9 in; 2—37 mm AA; 3—20 mm AA			
Main engines	Diesels; 2 shafts; speed 27 knots			

Six built in 1950-53 were received from USSR in 1956-57. Eighteen were built at Shanghai and Canton, with 12 completed by 1956. The last was assembled in 1957. Flush decked, large squat funnels, slightly raked, massive block bridge structure.

GUIDED MISSILE PATROL BOATS**5 Soviet "Osa" Class**

Displacement, tons	160 full load
Dimensions, feet	122 oa × 23 × 6
Guided weapons	4 large missile launchers in two pairs abreast aft
Guns	4—25 mm (2 twin)
Speed	40 knots

It was reported in Jan 1965 that one "Osa" class guided missile patrol boat had been incorporated in the Navy. Four more were acquired in 1966-67.

3 Soviet "Komar" Class

Displacement, tons	70 full load
Dimensions, feet	83 oa × 21 × 6
Guided weapons	2 launchers for missiles
Guns	2—25 mm (1 twin)
Main engines	Speed = 40 knots

One "Komar" class guided missile boat is reported to have joined the fleet in 1965. Two more were delivered in 1967.

FLEET MINESWEEPERS**12 Soviet "T 43" Class**

Displacement, tons	410 standard; 530 full load
Dimensions, feet	200 × 27.2 × 9
Guns	4—37 mm AA
Main engines	Diesels = 18 knots

Two were acquired from USSR in 1954-55. Ten more were built in Chinese shipyards, two in 1956, and the remainder since. The construction of "T 43" class fleet minesweepers was terminated at Wuchang, but continued at Canton.

1 Ex-British "Bathurst" Class

Ex-SS **CHEUNG HING** (ex-HMAS *Bendigo*)

Displacement, tons	815 standard; 1 025 full load
Dimensions, feet	162 pp; 186 oa × 31 × 8.5
Guns	2—5.1 in; 2—37 mm AA
Main engines	Triple expansion; 2 shafts; 1 800 ihp = 15 knots
Boilers	2 Admiralty 3-drum small tube type
Oil fuel (tons)	170
Radius, miles	4 300 at 10 knots

Built as a fleet minesweeper. Launched in Mar 1941 at Sydney, Australia. Disposed of as surplus after the Second World War. Converted from a merchant vessel.

MOTOR GUNBOATS**14 "New Shanghai" Class**

Length, feet	130
Guns	4—37 mm, 2 twin, 1 forward, 1 aft
	2—25 mm, 1 twin aft of bridge
Torpedo tubes	2

Two centreline trainable torpedo tubes abaft the superstructure. Fourteen boats of this class built, with construction continuing at Shanghai at the rate of four to six per year. Designed as interchangeable motor gunboats/fast patrol boats. Now in series construction in China. Three units transferred to North Korea and four to North Vietnam.

12 "Shanghai" Type

Displacement, tons	100 full load
Dimensions, feet	120 × 18 × 5.5
Guns	4—37 mm in twin mountings fore and aft
Main engines	4 diesels; 4 800 bhp = 28 knots

The prototype of these motor gun/torpedo boats appeared in 1959.

44 "Swatow" Type

Displacement, tons	67 full load
Dimensions, feet	83.5 × 20 × 6
Guns	4—37 mm in twin mountings; 2—12.7 mm
A/S weapons	8 depth charges
Main engines	4 diesels; 4 800 bhp = 40 knots

"P 6" type motor torpedo boat hulls with torpedo tubes removed. In 1958 "P-6" hulls were converted to "Swatow" class motor gunboats at Dairen, Canton, and Shanghai.

MOTOR TORPEDO BOATS**70 "P 4" Type**

This class have aluminium hulls. The German-built *Kual 102* was deleted from the list in 1963.

80 "P 6" Type

This class have wooden hulls. "P-6" class motor torpedo boats are under construction in Chinese Republican yards. All have been built since 1956.

PATROL CRAFT**2 Ex-Japanese Type**

Ex-KWANG KUO
(ex-Japanese No. 223)

Ex-HSIEN FENG
(ex-Chinese *Koo Ming*, ex-Japanese)

Displacement, tons	135
Dimensions, feet	96 × 19 × 9

SC Type. Built in 1942-43. (The ex-British harbour defence motor launches were lost).

COASTAL MINESWEEPERS**4 Ex-U.S. YMS Type**

Ex-YMS 346	Ex-YMS 367	Ex-YMS 393	Ex-YMS 2017
Displacement, tons	270 standard; 350 full load		
Dimensions, feet	136 × 24.5 × 6		
Guns	1—3 in; 2—20 mm; 2 DCT		
Main engines	2 GM Diesels; 1 000 bhp = 13 knots		

Built of wood in USA in 1942-43, and transferred to the Chinese Navy in 1948. Some are fitted as gunboats. Ex-YMS 339 was deleted from the list in 1963.

2 Ex-Japanese AMS Type

Ex-No. 4

No. 201 (ex No. 14)

Displacement, tons	222
Dimensions, feet	97.1 oa × 19.3 × 7.3 max
Guns	1—3.1 in; 4—25 mm (No. 201, 1—40 mm; 1—25 mm; 2—13 mm; 3—7.7 mm)
Main engines	1 Diesel; 300 bhp = 9.5 knots
Radius, miles	1 700 at 9.5 knots

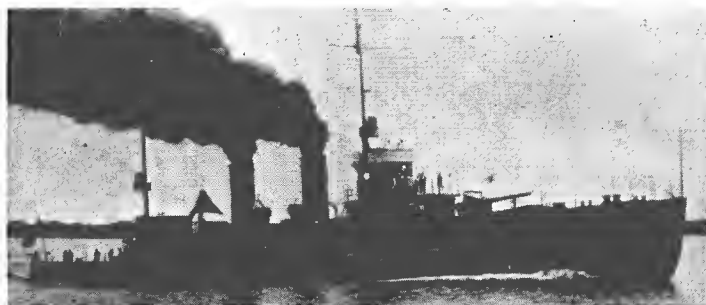
Ex-Japanese auxiliary minesweepers. Trawler type No. 201, completed in 1943, was delivered to China at Tsingtau on 3 Oct 1947, and taken over by the Chinese Republic.

GUNBOATS

Ex-YUNG SUI

Displacement, tons	650
Dimensions, feet	225 × 30 × 7 max
Guns	1—3 in AA; 1—40 mm AA; 4 MG
Main engines	Triple expansion; 2 shafts; 4 000 shp = 12 knots
Boilers	2 Yarrow; Coal fired

Built by Kiangnan Dock Co, Shanghai. Launched in 1929. Salvaged and repaired after sinking in 1949. *Yung Sui* is ex-Chinese Nationalist name.



YUNG SUI

Official

Ex-AN TUNG (ex-Japanese *Ataka*, ex-Nakosa)

Displacement, tons	727
Dimensions, feet	222 × 32 × 7.5
Guns	2—3 in; 5—25 mm; 6 MG
Main engines	Triple expansion; 1 700 ihp = 11 knots
Boilers	2 Kampon

Former Japanese. Built at Yokohama Dock. Launched in April, 1922. Coal burning. Ex-Yen An, ex-Yung Chi, ex-Asuka, ex-Yung Chi was discarded.



AN TUNG

Official

Gunboats—continued

3 Ex-U.S. Type

Ex-PGM 12	Ex-PGM 14	KAN TANG (ex-PGM 15)
Displacement, tons	280 standard; 348 trial; 450 full load	
Dimensions, feet	170 wl; 173.3 oa x 23 x 11 max	
Guns	1—3 in 50 cal dp; 2—40 mm AA (twin)	
Main engines	GM diesel; 2 shafts; 2 800 bhp = 20 knots	
Former US submarine chasers or patrol vessels (gunboats).		

CH'ANG CHIANG (ex-Ming Chuan)

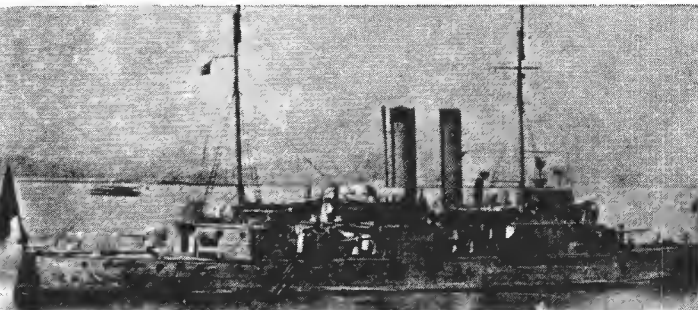
Displacement, tons	464
Dimensions, feet	176.8 x 26 x 6.5 max
Guns	3 MG
Main engines	Triple expansion; 2 shafts; 2 200 ihp = 12 knots
Boilers	2 Yarrow
Coal, tons	280

Built by Kiangnan Dock Co., Shanghai. Launched in 1929.

CHIANG YUAN

Displacement, tons	550
Dimensions, feet	170 pp; 180 oa x 28 x 7
Guns	1—20 mm AA
Main engines	Triple expansion; 2 shafts; 4 000 ihp = 12 knots
Boilers	Watertube
Coal, tons	113

Built by Kawasaki Co, Kobe. Launched in 1905. Former armament removed.



CHIANG YUAN Official

TING HSIN TUNG TEH

Displacement, tons	500 standard
Guns	1—3 in; 4—47 mm
Main engines	Speed: 11 knots
Fuel	Coal

captured by the People's Republic of China Navy in 1949.

RIVER GUNBOATS

Ex-YUNG AN (ex-Futami) Ex-YUNG PING (ex-Atami)

Displacement, tons	170
Dimensions, feet	148.5 x 22 x 4.7
Guns	1—47 mm AA; 5—25 mm AA; 3 MG
Main engines	2 sets triple expansion; 2 shafts; 1 200 ihp = 12 knots
Boilers	2 Kampon
Oil fuel (tons)	53

Built by Tama, Fujinagata. Both launched in 1929. Former Japanese river gunboats.



YUNG PING Official

Ex-CHANG TEH (ex-Seta)

Displacement, tons	305
Dimensions, feet	180 x 27 x 3.5
Guns	2—3 in; 6 MG
Main engines	Triple expansion; 2 shafts; 2 100 ihp = 14 knots
Boilers	2 Kampon
Oil fuel (tons)	85

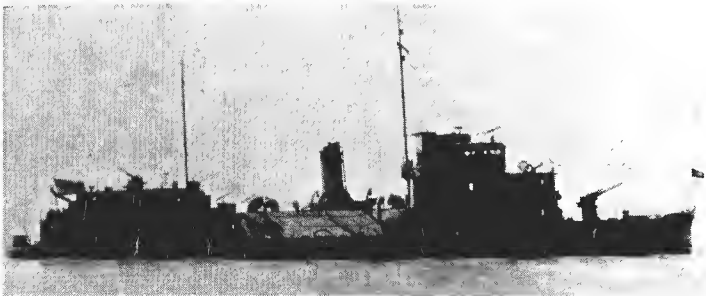
Japanese prize, built at Harima yard. Launched in 1923. Ex-Japanese Katado of the same class may still exist.

River Gunboats—continued

FU CHIANG (ex-Chiang Feng, ex-Chinese Kiang Shih, ex-Japanese Fushima)
Ex-CHIANG HSI (ex-Chinese Nan Chang, ex-Japanese Sumida)

Displacement, tons	373.6 tons, official Japanese figure, 320 standard
Dimensions, feet	159.1 pp; 164 wl; 165 oa x 32.2 x 4.1
Guns	1—3.1 in HA short cal; 8—25 mm
Main engines	2 geared turbines; 2 shafts; 2 200 shp = 16.7 knots
Boilers	2 Kampon
Radius, miles	1 496 at 14 knots

Both ships were built by Fujinagata Co, Osaka. Launched on 26 Mar 1939 and 30 October 1939, respectively. Completed on 15 July 1939 and 31 May 1940, respectively. Were the latest river gunboats in the Japanese Navy. Fushima bombed and bottomed at Anking on 29 Nov 1944, was salvaged and towed to Shanghai for repairs and was moored there at the end of the war. Sumida was at Shanghai at the end of the war; her armament has been removed for land batteries.



FU CHIANG Official

Ex-YING HAO (ex-HMS Sandpiper)

Displacement, tons	185
Dimensions, feet	160 x 30.7 x 2 mean
Guns	1—3.7 in howitzer; 9 smaller
Main engines	2 sets triple expansion; 2 shafts; 600 ihp = 11 knots
Boilers	1, of Admiralty 3-drum type

Built by John I. Thornycroft & Co Ltd, Southampton. Launched on 9 June 1933. Presented to Nationalist China by Great Britain in Feb 1942, and subsequently taken over by the Republicans. Now has mainmast.

Ex-NAN CHIANG (ex-Ying Teh, ex-Lung Huan, ex-HMS Falcon)

Displacement, tons	372
Dimensions, feet	150 x 28.7 x 5 mean
Guns	1—3.7 in howitzer; 2—6 pdr; 10 MG
Main engines	Parsons geared turbines; 2 250 shp = 15 knots
Boilers	2, of Admiralty 3-drum type
Fuel oil, tons	B4

Built by Yarrow & Co, Ltd, Scotstoun, Glasgow. Launched in 1931. Presented to Nationalist China by the British Government in Feb 1942, and subsequently taken over by the Republicans.

Ex-YING SHAN (ex-HMS Gannet)

Displacement, tons	310
Dimensions, feet	177 wl; 184.7 oa x 29 x 3.2
Guns	2—3 in AA; 8 MG
Main engines	Geared turbines; designed 2 250 shp = 16 knots
Boilers	Yarrow
Fuel oil (tons)	60

Designed by Yarrow. Built by Yarrow & Co, Ltd, Scotstoun, Glasgow. Launched in 1927. Presented to Nationalist China by Great Britain in Feb 1942, and subsequently taken over by the Republicans.

Ex-MEI YUAN (ex-USS Tutuila) Ex-TAI YUAN (ex-Tatara, ex-USS Wake, ex-Guam)

Displacement, tons	370 standard
Dimensions, feet	150 wl x 159.5 oa x 27 x 5.2 mean—fresh water; (6 mex)
Guns	2—3 in 23 cal; 10 MG
Main engines	Triple expansion; 1 950 ihp = 12 knots
Oil fuel (tons)	75

Built by Kiangnan Dock Co, Shanghai. Launched on 14 June and 28 May 1927 respectively. Mei Yuan was presented to China by the US Government in March 1942. Sister ship was recovered from Japanese hands and presented to China in 1946.



TAI YUAN Official

River Gunboats—continued

Ex-KIANG KUN (ex-Japanese *Narumi*, ex-Italian *Ermanno Carlotto*)

Displacement, tons	180 standard
Dimensions, feet	160 × 24.5 × 2.8
Guns	2—3 in; 6 MG
Main engines	Designed 1 100 ihp = 14 knots max
Boilers	2 Yarrow
Oil (tons)	56

Built by Shanghai Dock & Engineering Co. Launched in 1921. Completed in 1921. Shallow draught river gunboat. Twin screws in tunnels.

Ex-FAKU (ex-French *Balny*)

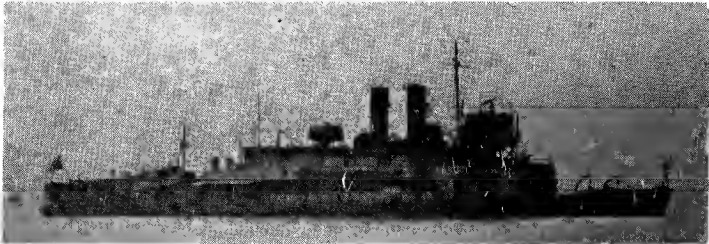
Displacement, tons	201
Dimensions, feet	167.2; 179 oa × 23 × 5
Guns	1—3 in AA; 2—1 pdr; 4 MG
Main engines	Triple expansion; 920 ihp = 14 knots
Boilers	2 Fouché water tube
Fuel (tons)	45 coal
Range, miles	900 at 14 knots

Built by Chantiers de Bretagne, Nantes. Launched in 1920. Completed in 1921.

Ex-HO HSEUH (ex-Chinese *Yang Ch'i*, ex-Japanese *Toba*)

Displacement, tons	215
Dimensions, feet	180 × 27 × 2.5 mean; (4 max)
Guns	3—3 in; 3—25 mm AA; 3 MG
Main engines	Triple expansion; 2 shafts; 900 ihp = 9 knots
Boilers	2 Kampon
Coal (tons)	80

Former Japanese shallow draught river gunboat. Built by Sasebo, Japan. Launched in 1911.



HO HSEUH

Official

BOOM DEFENCE VESSELS

1 Ex-British "Bar" Type

Ex-Japanese No. 101 (ex-HMS *Barlight*)

Displacement, tons	750 standard; 1 000 full load
Dimensions, feet	150 pp; 173.8 oa × 32.2 × 9.5
Guns	1—3 in dp; 6 MG
Main engines	Triple expansion; 850 ihp = 11.75 knots
Boilers	2 single-ended

Boom defence vessel of British "Bar" Class. Built by Lobnitz & Co Ltd, Renfrew. Launched on 10 Sep 1938. Captured by Japanese in 1941. Acquired by China in 1945.

5 Ex-U.S. "Tree" Class

Displacement, tons	560 standard; 805 full load
Dimensions, feet	146 wl; 163 oa × 30.5 × 11.8
Guns	1—3 in AA
Main engines	Diesel-electric; 800 bhp = 13 knots

Former United States netlayers of the "Tree" class taken over by the People's Republic.

SURVEY SHIPS

Ex-CHUNG NING (ex-Japanese *Takebu Maru*)

Displacement, tons	200 standard
Dimensions, feet	115 × 16 × 6
Main engines	Speed; 10 knots

Former Japanese. Employed for hydrographic and general purpose duties.

Ex-FUTING

Displacement, tons	160 standard
Dimensions, feet	90 × 20 × 8
Main engines	Speed: 11 knots

REPAIR SHIP

TAKU SHAN (ex-Hsing An, ex-USS *Achilles*, ARL 41, ex-LST 455)

Displacement, tons	1 625 light; 4 100 full load
Dimensions, feet	316 wl; 328 oa × 50 × 11
Guns	1—3 in; 8—40 mm AA
Main engines	Diesel-electric; 2 shafts; 1 800 bhp = 11 knots

Launched on 17 Oct 1942. Burned and grounded in 1949, salvaged and refitted.

LANDING SHIPS

20 Ex-U.S. LST Type

CHANG PAI SHAN
CHING KANG SHAN
Ex-CHUNG 101 (ex-USS LST 804)
Ex-CHUNG 102 (ex-USS LST)
Ex-CHUNG 107 (ex-USS LST 1027)
Ex-CHUNG 110
Ex-CHUNG 111 (ex-USS LST 805)
Ex-CHUNG 116 (ex-USS LST 406)

Ex-CHUNG 122 (ex-Ch'ing Ling)
Ex-CHUNG 125
I MENG SHAN (ex-Chung 106 ex-USS LST 589)
No. 16
No. 258
TA PIEH SHAN
TAI HSING SHAN
SZU CH'ING SHAN

Displacement, tons	1 653 standard; 4 080 full load
Dimensions, feet	316 wl; 328 oa × 50 × 14
Main engines	Diesel; 2 shafts; 1 700 bhp = 11 knots

There are now reported to be 20 ex-US LSTs in naval service and eleven other ex-US LSTs in the merchant service.

13 Ex-U.S. LSM Type

Ex-CHUAN SHIH SHUI
Ex-HUA 201 (ex-USS LSM 112)
Ex-HUA 202 (ex-USS LSM 248)
Ex-HUA 204 (ex-USS LSM 430)
Ex-HUA 205 (ex-USS LSM 336)
Ex-HUA 207 (ex-USS LSM 282)
Ex-HUA 208 (ex-USS LSM 42)
Ex-HUA 209 (ex-USS LSM 153)
Ex-HUA 211
Ex-HUA 212
Ex-HUAI HO (ex-Chinese *Wan Fu*)
Ex-HUANG HO (ex-Chinese *Mei Sheng*, ex-USS LSM 433)
Ex-YUN HO (ex-Chinese *Wang Chung*)

Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa × 34.5 × 8.8
Main engines	Diesel; 2 shafts; 2 800 = 12 knots

Built in USA in 1944-45. Some were converted for minelaying. Armament varies.

LANDING CRAFT

16 Ex-U.S. LSIL Type

Ex-CHU TIEN (ex-Chinese *Lien Kuang*, ex-USS LCI 517)
Ex-KU CHOU
Ex-USS LCI 488
Ex-LIEN PI (ex-USS LCI 514)
MIN 301
MIN 303
MIN 306
MIN 311
MIN 312
MIN 313
MIN 319
MIN 321
MIN 325
MIN 331
Ex-YUNG KAN (ex-Chinese *Lien Yung*, ex-USS LCI 632)

Displacement, tons	230 light; 387 full load
Dimensions, feet	159 × 23.7 × 5.7
Main engines	Diesel; 2 shafts; 1 320 bhp = 14 knots

Built in USA in 1943-45. Reported to be fitted with rocket launchers. Some are fitted as minesweepers. Armament varies.

10 Ex-U.S. LCU (ex-LCT) Type

Ex-HO CHIEN (ex-USS LCT 515) Ex-HO YUNG (ex-USS LCT 1171)

Displacement, tons	160 light; 320 full load
Dimensions, feet	105 wl; 119 oa × 33 × 5
Main engines	Diesel; 3 shafts; 475 bhp = 10 knots
Oil fuel (tons)	80

Former United States Navy Tank Landing Craft later reclassified as Utility Landing Craft. There are reported to be ten utility landing craft comprising two of the ex-British LCT (3) class and eight of the ex-US LCT (5) and LCT (6) class.

SUPPLY SHIPS

8 Ex-U.S. Army FS Type

Ex-US Army FS 146 (ex-Clover) Ex-US Army FS—
Ex-US Army FS 155 (ex-Violet) Ex-US Army FS—
Ex-TA CHEN (ex-US)

Displacement, tons	1 000 standard
Dimensions, feet	175 oa × 32 × 10
Main engines	GM diesels; 1 000 bhp = 12 knots

Built in USA in 1944-54. Two are reported to be employed as motor torpedo boat tenders. The transport *Chiao Jen* was stricken from the list in 1967.

OILERS

There are reported to be two ex-US "Mattawee" Class petrol tankers and three ex-US 174 ft yard oilers of the "YO" type.

TUGS

There are reported to be at least two tugs of the USSR type, two of the US Navy ATA type, two of the US Army type, and five of the US Army harbour tug type. There are also reported to be 125 armed motor junks, 100 armed motor launches and 150 service craft and miscellaneous boats.

COLOMBIA

Administration

Commandant of the Navy:
Vice-Admiral Orlando Lemaitre Torres

Chief of Naval Staff
Captain Eduardo Melendez Ramirez

Diplomatic Representation

Naval Attaché in Washington:
Captain Jaime Parra Ramirez

Strength of the Fleet

- 3 Destroyers
- 1 Frigate
- 1 Destroyer Escort Transport
- 8 Coast Guard Patrol Vessels
- 5 River Gunboats
- 14 Patrol Motor Launches
- 26 Support Ships and Service Craft

Designation

Ships' names are prefaced by the letters "ARC" (Armada Republica de Colombia)

Personnel

1967: 700 officers and 6,500 men

Mercantile Marine

Lloyd's Register of Shipping
41 vessels of 186,744 tons gross

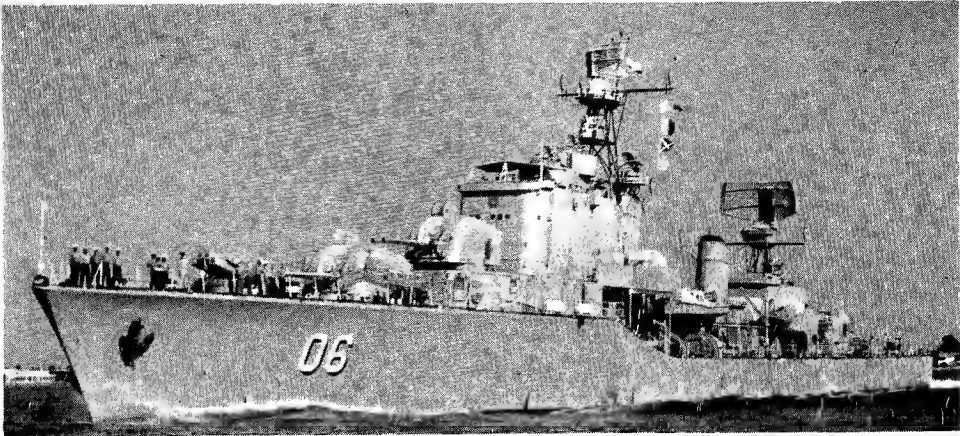
DESTROYERS (Destructoros)

Name	No.	Builders	Laid down	Launched	Completed
SIETE DE AGOSTO	06	Götaverken, Göteborg	Nov 1955	19 June 1956	31 Oct 1958
VEINTE DE JULIO	05	Kockums Mek Verkstads A/B, Malmö	Oct 1955	26 June 1956	15 June 1958

2 Modified Swedish "Halland" Type

Displacement, tons 2 650 standard; 3 100 full load
Length, feet (metres) 380.5 (116.0) pp; 397.2 (121.1) wl
Beam, feet (metres) 40.7 (12.4)
Draught, feet (metres) 12.5 (3.8)
Guns, surface 6—4.7 in (120) mm, 3 twin turrets
Guns, AA 4—40 mm, single mounts
Torpedo tubes 4—21 in (533 mm)
A/S weapons 1 quadruple DC rocket launcher
Boilers 2 Penhøet, Motala Verkstad; 568 psi; 840°F
Main engines De Laval double reduction geared turbines; 55 000 shp; 2 shafts
Range, miles 445 at 35 knots
Oil fuel (tons) 524
Speed, knots 35 designed, 16 economical
Complement 260 (20 officers, 240 men)

Modified "Halland" type ordered in 1954. The hull and machinery are similar but they have different armament (six 4.7 inch instead of four, no 57 mm guns, four 40 mm guns instead of six, and four torpedo tubes instead of eight) and different accommodation arrangements. They have an anti-submarine rocket projector, more radar and communication equipment, and air conditioned living spaces, having been designed for the tropics.



7 DE AGOSTO

1967, Colombian Navy, Official

The change of name from 13 de Junio to 7 de Agosto was decreed by the Colombian Navy in July 1957.

PHOTOGRAPHS. A photograph of 20 de Julio appears in the 1966-67 edition.

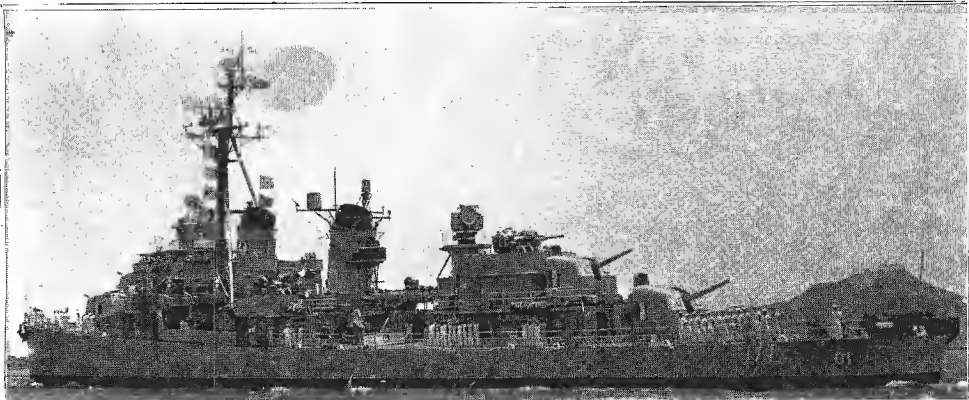
Name	No.
ANTIOQUIA (ex-USS Hale, DD 642)	DD 01

1 Ex-U.S. "Fletcher" Type

Displacement, tons 2 100 standard; 2 952 full load
Length, feet (metres) 369 (112.5) pp; 376 (114.8) oa
Beam, feet (metres) 39.5 (12.0)
Draught, feet (metres) 12.3 (3.8) mean; 18.0 (5.5) max
Guns, surface 4—5 in (127 mm) 38 cal.
Guns, AA 6—3 in (76 mm) 50 cal.
Torpedo tubes 5—21 in (533 mm) quintupled
A/S weapons 2 fixed Hedgehogs; 1 DC rack
Boilers 4 Babcock & Wilcox; 615 psi; 850°F
Main engines 2 sets GE geared turbines 60 000 shp; 2 shafts
Speed, knots 35 designed, 37 max, 14 econ
Radius, miles 6 000 at 14 knots
Oil fuel (tons) 650
Complement 300 (peace); 350 (war)

Former United States destroyer of the "Fletcher" class. Transferred from the US Navy to the Colombian Navy at Boston, Massachusetts, in 1961, and renamed Antioquia.

Builders	Laid down	Launched	Completed
Bath Iron Works Corporation, Bath, Maine	23 Nov 1942	4 Apr 1943	15 June 1943



ANTIOQUIA

1963, Colombian Navy, Official

FRIGATE (Fragata)

Name	Pennant No.
ALMIRANTE BRION (ex-USS Burlington, PF 51)	FG 14

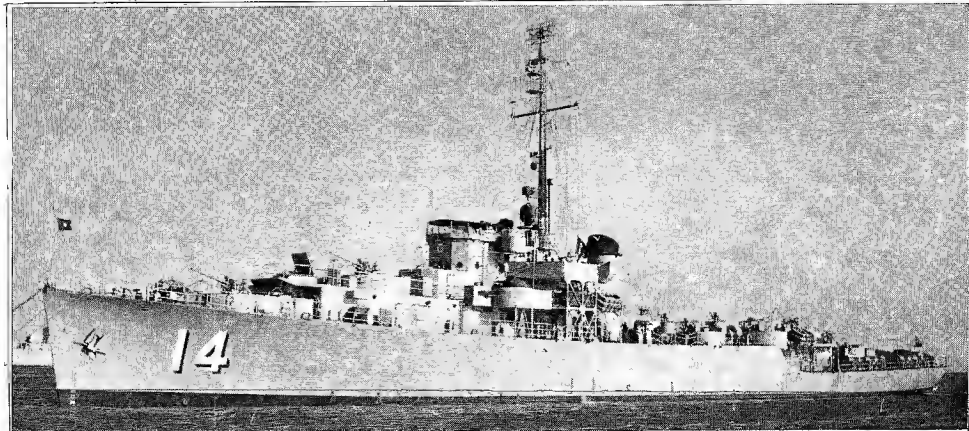
"Almirante Padilla" Class

Displacement, tons 1 430 standard; 2 100 full load
Length, feet (metres) 303 (92.4)
Beam, feet (metres) 37.5 (11.4)
Draught, feet (metres) 13.7 (4.2)
Guns, surface 3—3 in (76 mm) 50 cal.
Guns, AA 6—40 mm
A/S Hedgehog; 6 DCT; 2 DCR
Boilers 2 three-drum
Main engines Triple expansion 5 500 ihp; 2 shafts
Speed, knots 20
Radius, miles 9 500 at 12 knots
Oil fuel (tons) 645
Complement 147

Former United States patrol escort of the "Tacoma" class. Similar to the original British "River" class frigate design. Almirante Brion was acquired from the United States Navy in 1953, and served 14 months in Korean waters.

Of this class, Captain Tono, FG 12 (ex-USS Bisbee), was withdrawn from service in Dec 1962, and Almirante Padilla, FG 11 (ex-USS Groton) in Jan 1965.

Builders	Laid down	Launched	Completed
Consolidated Steel Corp, Los Angeles	19 Oct 1943	7 Dec 1943	3 Apr 1944



ALMIRANTE BRION

1965 Colombian Navy, Official

DESTROYER TRANSPORT

ALMIRANTE PADILLA (ex-USS <i>Tollberg</i> , APD 103, ex-DE 593)	
Displacement, tons	1 400 standard; 2 130 full load
Dimensions, feet	300 wl; 306 oa × 37 × 12·7 max
Guns	1—5 in, 38 cal dp; 6—40 mm AA
Main engines	GE turbo-electric; 2 shafts; 12 000 shp = 23·6 knots
Boilers	2 "D" Express
Oil fuel (tons)	350
Radius, miles	5 500 at 15 knots
Complement	204 accommodation plus 162 troop capacity

Built by Bethlehem SB Co, Hingham, Mass. Laid down on 30 Dec 1943, launched on 12 Feb 1944, completed on 31 Jan 1945. Former US high speed transport (converted destroyer escort) transferred in 1945.

Another vessel of this class, either *Hubbard*, APD 53, or *Walsh*, APD 111, is scheduled to be transferred to Colombia by the United States. A photograph of this APD type appears in the 1965-66 and 1966-67 editions.

COASTGUARD VESSELS

CARLOS E. RESTREPO ESTEBAN JARAMILLO PEDRO GUAL

Displacement, tons	123·5
Dimensions, feet	107·8 pp × 18 × 6
Guns	1—20 mm AA
Main engines	2 Maybach diesels; 2 450 bhp = 26 knots

Built by Werft Gebr. Schürenstedt KG Sardenfleth in 1964. Pennant Nos. AN 206, AN 205 and AN 204, respectively.



PEDRO GUAL 1965, Colombian Navy, Official

OLAYA HERRERA

Displacement, tons	40
Dimensions, feet	68·8 pp × 12·8 × 3·5
Guns	1—50 Browning AA
Main engines	2 Merbans diesels; 570 bhp

Built by Astilleros Magdalena, Barranquilla, in 1960. Pennant No. AN 203.

GENERAL RAFAEL REYES GENERAL VASQUES COBO

Displacement, tons	146
Dimensions, feet	118 pp; 124·7 oa × 23 × 5
Guns	1—40 mm
Main engines	2 Maybach diesels; 2 400 bhp = 18 knots

Built by Lürssen Werft, Vegesack. Launched on 10 Nov and 27 Sep 1955, respectively. Delivered in May 1956. Pennant Nos. AN 01 and AN 02 respectively. Photograph of *General Vasques Cobo* in the 1957-58 to 1964-65 editions.

ESPARTANA

Displacement, tons	50
Dimensions, feet	90 wl; 96 oa × 13·5 × 4
Guns	1—20 mm AA
Main engines	2 diesels; 300 bhp = 13·5 knots

Launched on 22 June 1950 at Cartagena Naval Dockyard. Pennant No. GC 100.



ESPARTANA 1964, Colombian Navy, Official

CAPITAN BINNEY

Displacement, tons	23
Dimensions, feet	67 × 10·7 × 3·5
Main engines	Diesels; 115 bhp = 13 knots

Built at Cartagena in 1947. Buoy and lighthouse inspection boat. Named after first head of Colombian Naval Academy, Lt-Commander Ralph Douglas Binney, RN. Pennant No. GC 101. Photograph in the 1961-62 to 1964-65 editions.

There are also *Rodriguez Zamora* (ex-USN *ARD 28*), 6 700 tons full load, 488·7 oa × 81 feet, crew 109, transferred from the United States Navy, officially rated as auxiliary floating dry dock; *Capitan Eloy Mantilla* (ex-USN *YR 66*), 516 tons standard, 150 oa × 34 feet, crew 24 transferred from the US Navy, rated as floating workshop; floating dock *Manuel Laro* and repair boat *Victor Cubillos*.

RIVER GUNBOATS

3 "Arauca" Class

ARAUCA CF 37	LETICIA CF 36	RIOHACHA CF 35
Displacement, tons	184	
Dimensions, feet	163·5 oa × 23·5 × 2·8	
Guns	2—3 in, dp, 50 cal; 4—20 mm	
Main engines	2 Caterpillar engines; 916 bhp = 13 knots	
Range, miles	1 000	
Complement	43	

Built by Union Industrial de Barranquilla (Unial) Colombia. Launched in 1955. Completed in 1956. Pennant Nos. CF 37, 36 and 35 respectively. A photograph of *Arauca* appears in the 1957-58 to 1960-61 editions, and of *Leticia* in the 1961-62 to 1965-66 editions.



RIOHACHA 1966, Colombian Navy, Official

BARRANQUILLA CF 31 CARTAGENA CF 33

Displacement, tons	142
Dimensions, feet	130 pp; 137·8 oa × 23·5 × 2·8 max
Guns	2—3 in; 1—20 mm AA; 4 MG
Main engines	2 Gardner semi-diesels; 2 shafts; working in tunnels; 600 hp = 15·5 knots
Oil fuel (tons)	24
Complement	39

Both built by Yarrow & Co Ltd, Scotstoun, Glasgow, and launched on 10 May 1930, and 26 Mar 1930, respectively. *Barranquilla* was modernised in Cartagena with new armament, engines, auxiliaries and superstructure. Photograph of *Cartagena* in the 1957-58 to 1960-61 editions. Sister ship *Santa Marta*, CF 32, was withdrawn from service in Dec 1962.



BARRANQUILLA 1961, Colombian Navy, Official

TENDERS

GORGONA FB 161

Displacement, tons	560
Dimensions, feet	135 × 29·5 × 9·3
Main engines	2 Nohab diesels; 910 bhp = 13 knots

Built by Astillero Lidingoverken. Launched in May 1954. Pennant No. FB 161. Formerly classified as a tender. Recently employed in the hydrographic service.



GORGONA 1963, Colombian Navy, Official

RAFAEL MARTINEZ

Displacement, tons	38
Dimensions, feet	56 pp, 57·5 oa × 15 × 8
Main engines	2 six-cylinder diesels, 120 bhp

JAMARY

Dimensions, feet	146 × 25·5 × 8
Complement	43

Small tender equipped as a naval hospital ship with beds for 80 patients.

SMALL TRANSPORTS

CIUDAD DE QUIBDO TM 43

Displacement, tons	633
Dimensions, feet	165 × 23·5 × 9
Main engines	1 Mai diesel; 1 shaft; 390 bhp = 11 knots
Oil fuel (tons)	32
Complement	12

Built by Gebr. Sander Delfzijl, in the Netherlands. Photograph in the 1957-58 edition.

BELL SALTER (ex-Souris, ex-Leccarmaro II). TM 41.

Displacement, tons	60
Dimensions, feet	82 × 14 × 5·5
Main engines	2 GM diesels; 1 500 rpm; speed 8 knots

ALBERTO GOMEZ TF 53
HERNANDO GUTIERREZ TF 52

MARIO SERPA TF 51

Displacement, tons	70
Dimensions, feet	82 × 18 × 2·8
Main engines	2 GM diesels; 260 bhp = 9 knots
Oil fuel (tons)	4
Complement	10 (berths for 56 troops)

River transports. Launched at Cartagena in 1954, 1953 and 1955, respectively. Named after Army officers. Photograph of *Alberto Gomez* in the 1954-55 to 1957-58 editions.

OILERS

BARRANCABERMEJA BT 66

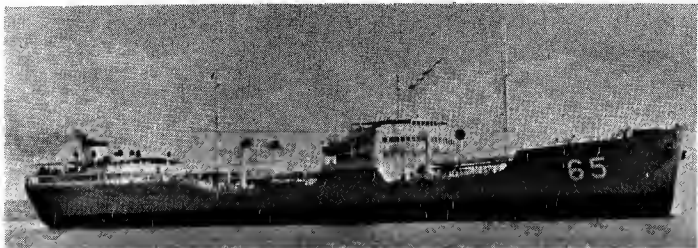
Displacement, tons	9 214 light; 22 316 full load
Dimension feet	602·3 × 76 × 32·1
Main engines	Rush-Sultzer diesel; 1 shaft; 10 500 bhp = 15·5 knots
Complement	65 (10 officers, 42 men)

Built by Sociedad Española de Construcción Naval, Cadiz. Laid down on 1 Feb 1965, launched on 1 Aug 1965 and completed on 1 June 1966.

COVENAS (ex-M/T *Randfonn*) 8T 65

Measurement, tons	22 096 gross; 5 096 net; 14 000 deadweight
Dimensions, feet	515·3 oa × 64 × 30·5 max
Main engines	Diesel; 1 shaft; 6 000 bhp = 14·5 knots
Complement	49 (7 officers, 42 men)

Built by Gotaverken in 1950. Acquired in 1966. Capacity 136 250 barrels.



COVENAS 1966, Colombian Navy, Official

ANTONIO DE AREVALO (ex-Gronland) 8T 64

Measurement, tons	22 682 gross; 5 952 net; 16 730 deadweight
Dimensions, feet	549·8 × 68 × 30 max
Main engines	1 MAN diesel; 6 650 bhp = 15 knots

Built by Deutsche Werft, Hamburg, in 1952. Purchased from commercial sources in 1959. Photograph in 1963-64 to 1965-66 editions.

MAMONAL (ex-US *Tonti*, AOG 76)

SANCHO JIMENO (ex-*Transmere*, ex-USS *Kiamichi* AOG 73) BT 63

Displacement, tons	5 984 full load
Measurement, tons	3 150 gross; 3 925 deadweight; 2 063 net
Dimensions, feet	309 wl, 325 oa × 48·2 × 21·7
Main engines	Diesel; 1 shaft; 1 400 bhp = 10 knots
Complement	33

Built by Todd Shipyard, Houston, and St. John's River S.B. Corp., Jacksonville, respectively. *Sancho Jimeno* was purchased in 1952. *Mamonal* was transferred in Jan 1965.



MAMONAL 1965, Colombian Navy, Official

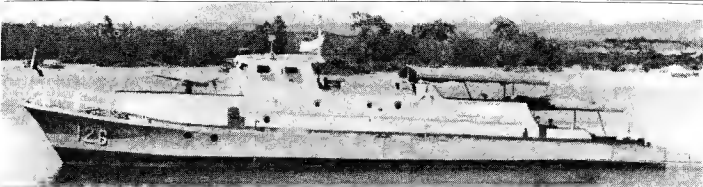
PATROL MOTOR LAUNCHES

ALBERTO RESTREPO (1 Oct 1952)
CARLOS GALINDO (1954)

HUMBERTO CORTES (26 Nov 1952)
JUAN LUCIO (2 May 1953)

Displacement, tons	35
Dimensions, feet	76·8 pp; 81·8 oa × 12 × 2·8
Guns,	1—20 mm AA; 4 MG
Main engines	2 GM diesels; 260 bhp = 13 knots
Complement	13

Built at Cartagena. Launch dates above. Nos. LR 125, 128, 126 and 122 respectively. A photograph of *Alberto Restrepo* appears in the 1957-58 to 1964-65 editions.



HUMBERTO CORTES 1965, Colombian Navy, Official

ALFONSO VARGAS (3 July 1952)

FRITZ HAGALE (19 July 1952)

Displacement, tons	33
Dimensions, feet	72 pp; 76 oa × 12 × 2·8
Guns	1—20 mm AA; 4 GM
Main engines	2 GM; diesels 280 bhp = 13 knots
Complement	10

Built at Cartagena naval base. Designed for operations on rivers. Named after naval officers. Launch dates above. Pennant Nos LR 123 and 124 respectively. A photograph of *Fritz Hagale* appears in the 1956-57 to 1963-64 editions.

DILIGENTE PALACE TRIUNFANTE VENGADORA
INDEPENDENTE TORMENTOSO VALEROSA VOLADORA

Launched at the Naval Base, Cartagena, in 1942-54. The boats vary in detail. Pennant Nos. LR 138, 134, 130, 136, 133, 137, 139 and 135, respectively.

TUGS

PEDRO DE HEREDIA (ex-USS *Choctaw*, ATF 70) RM 72

Displacement, tons	1 235 standard; 1 764 full load
Dimensions, feet	195 wl; 205 oa × 38·5 × 15·5 max
Main engines	4 diesels, electrical drive; 3 000 bhp = 16·5 knots

Former United States ocean tug of the "Apache" class. Launched on 18 Oct 1942.

TENIENTE SORZANO

Displacement, tons	54
Dimensions, feet	60 pp; 65·7 oa × 17·5 × 9
Main engines	6-cylinder diesel; 240 bhp

ANDAGOYA RM 71

Displacement, tons	100
Main engines	Caterpillar diesel; 80 bhp = 8 knots

Launched in 1928. Re-engined in 1955. Photograph in 1957-58 edition.

ABADIA MENDEZ

Displacement, tons	39
Dimensions, feet	52·5 × 11 × 4
Main engines	Caterpillar diesel; 80 bhp = 8 knots

Built in Germany in 1924. Harbour tug. There are also the harbour tug, *La Colombiana* and the river tug *Joves Fiallo*, RR 90.

CANDIDO LEGUIZAMO
CAPITAN HERNANDO BOCANEGRA
CAPITAN ALVARO RUIZ
CAPITAN CASTRO

CAPITAN RIGOBERTO GIRALDO
CAPITAN JULIO PATINO
CAPITAN VLADIMIR VALEK
TENIENTE LUIS BERNAL

Displacement, tons	50
Dimensions, feet	63 × 14 × 2·5
Main engines	2 GM diesels; 260 bhp = 9 knots

TENIENTE MIGUEL SILVA

Dimensions, feet	73·3 × 17·5 × 3
Main engines	2 diesels; 260 bhp = 9 knots

River tug. Built by Union Industrial (Unial) of Barranquilla. Pennant No. 89.

COMMONWEALTH

Commonwealth Forces in the 1967 Navy List are:-

AUSTRALIA, CANADA, CEYLON, GHANA, INDIA, KENYA, MALAYSIA, NEW ZEALAND, NIGERIA, PAKISTAN, UNITED KINGDOM

CONGO

The Republic of Congo (formerly Middle Congo, of French Equatorial Africa), which became independent on 15 Aug 1960, has formed a naval service.

COSTA RICA

The Coast Guard includes two 90 ft wooden patrol boats and an armed tug.

CUBA

Strength of the Fleet

- 4 Frigates (1 ex-Crucero)
- 2 Escort Patrol Vessels
- 14 Patrol Vessels (Submarine Chasers)
- 18 Guided Missile Boats
- 24 Motor Torpedo Boats
- 13 Coast Guard Cutters
- 21 Auxiliaries and Service Craft

Naval Establishments

Naval Academy: At Mariel, for officers
Naval School: At Morro Castle, for men

Personnel

1967: 6,000 (380 officers, 220 subordinate officers, and 5,400 men)

Mercantile Marine

Lloyd's Register of Shipping:
99 vessels of 238,006 tons gross

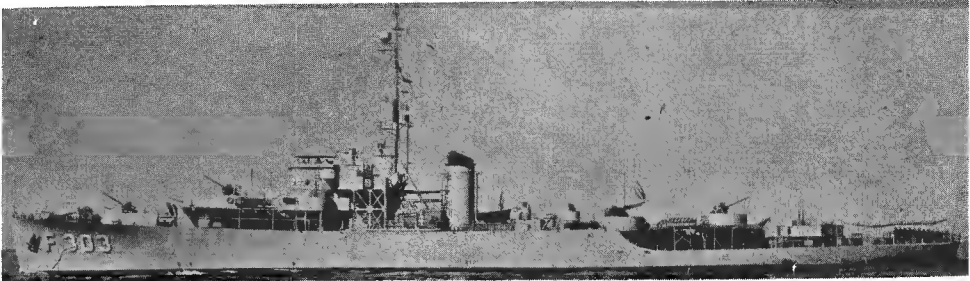
FRIGATES (Fragatas)

Name	Pennant No.	Builders	Laid down	Launched	Completed
ANTONIO MACEO (ex-USS Peoria, PF 67)	F 302	Leathem D. Smith, S. B. Co, Sturgeon Bay, Wisconsin	4 June 1943	2 Oct 1943	15 Oct 1944
JOSÉ MARTÍ (ex-USS Eugene, PF 40)	F 301	Consolidated Steel, Los Angeles, California	12 June 1943	6 July 1943	15 Jan 1944
MAXIMO GOMÉZ (ex-USS Grand Island, PF 14)	F 303	Kaiser Cargo Inc, Richmond, California	27 Nov 1943	19 Feb 1944	27 May 1944

3 Ex-U.S. PF Type

Displacement, tons 1 430 standard; 2 415 full load
Length, feet (metres) 285.5 (87.0) wl; 304.0 (92.7) oa
Beam, feet (metres) 37.5 (11.4)
Draught, feet (metres) 13.7 (4.2)
Guns, dual purpose 3—3 in (76 mm)
Guns, AA Ant. Maceo: 4—40 mm; 4—12.7 mm
José Martí: 4—40 mm; 6—20 mm
Max. Gomez: 4—40 mm; 9—20 mm
A/S Hedgehog; DCT; racks
Boilers 2 three-drum type
Main engines Triple expansion
5 500 ihp; 2 shafts
Speed, knots 18
Complement 135 (Jose Martí)

Acquired from the US Navy in 1947. Refitted in 1956



MAXIMO GOMÉZ

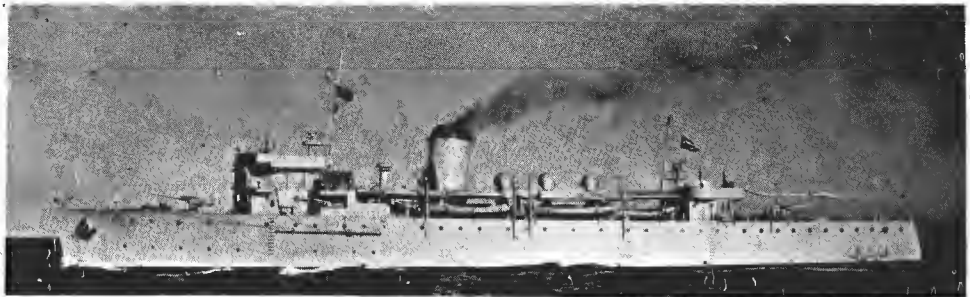
Added 1966, Cuban Navy, Official

at Key West. José Martí fitted as flagship 1959-60 editions, and of Antonio Maceo in the 1960-61 to 1965-66 editions.

CUBA

Displacement, tons 2 055
Length, feet (metres) 260 (79.3) pp
Beam, feet (metres) 39 (11.9)
Draught, feet (metres) 14 (4.3)
Guns, surface 2—4 in (102 mm);
2—3 in (76 mm)
Guns, AA 4—57 mm; 5—20 mm
Boilers 2 Foster Wheeler 3-drum type
Main engines Triple expansion; 6 000 ihp
Speed, knots 14

Originally rated as a *crucero* (cruiser). Built by Cramp, Philadelphia. Launched on 10 Aug 1911. Reconstructed in 1936-37. Converted from coal to oil burning. Completed further reconstruction in 1956.



CUBA

Added 1964, Cuban Navy, Official

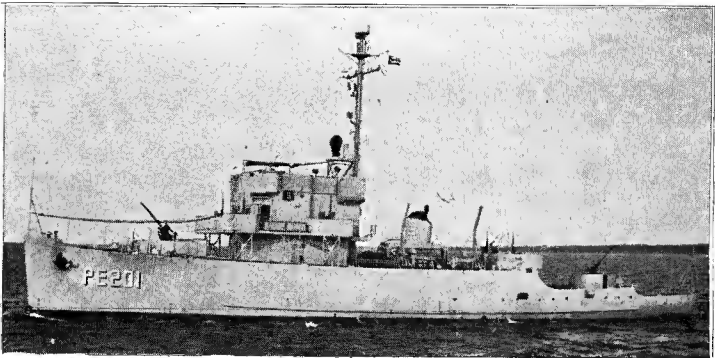
PATROL ESCORTS (Buques de Patrulla y Escolta)

2 Ex-U.S. PCE Type Escort Patrol Vessels

Name	CARIBE (ex-USS PCE 872)	SIBONEY (ex-USS PCE 893)
Pennant No.	PE 201	PE 302
Builders	Albina Eng. & Mach. Works, Portland, Oreg.	Williamette Iron & Steel Corp., Portland, Oreg.
Laid down	30 Jan 1943	27 Oct 1942
Launched	24 Mar 1943	8 May 1943
Completed	29 Nov 1943	25 July 1944

Displacement, tons 640 standard; 903 full load
Dimensions, feet 180 wl; 184.5 oa x 33 x 9.5
Guns 1—3 in dp; 3—40 mm AA; 4—20 mm AA
A/S weapons Hedgehog; DCT and racks
Main engines 12 cylinder diesels; 2 shafts; 1 800 bhp = 14 knots
Complement 99

Built in USA. Former United States escort patrol vessels. Box deck-house amidship was removed from *Caribe* in 1953. Both completed a refit in 1956 at Key West Naval Base, when new anti-submarine armament and equipment were installed. The old sloop *Patia*, at Mariel as a permanent installation of the Naval Academy for training midshipmen, has been removed from the effective list.



CARIBE

Cuban Navy Official

PATROL VESSELS

8 Ex-U.S.S.R. "S.O.I." Type Submarine Chasers

Displacement, tons 215
Dimensions, feet 147.7 x 18 x 6.5
Guns 4—25 mm (2 twin)
A/S weapons 4 five-barrelled rocket launchers
Main engines 3 diesels; 3 500 bhp = 26 knots

Six were transferred from the USSR by Sep 1964. Two arrived on tow in Feb 1967.

6 Ex-U.S.S.R. "Kronstadt" Type Submarine Chasers

Displacement, tons 300 standard; 350 full load
Dimensions, feet 167.3 x 19.3 x 9
Guns 1—3.9 in; 2—37 mm AA; 3—20 mm AA; DC
Mines 6 on two racks at the stern
Main engines 2 diesels; 2 shafts; speed = 22 knots

Former Soviet submarine chasers reported transferred from the USSR in 1962.

18 Ex-U.S.S.R. "Komar" Type Guided Missile Boats

Displacement, tons 75 standard; 100 full load
Dimensions, feet 88 oa x 21 x 6
Guided weapons 2 launchers for missiles of 10 to 15 miles range
Main engines Speed = 40 knots

Former Soviet motor gunboats. Twelve were transferred from the USSR in 1962. Last two arrived in Dec 1966.

MOTOR TORPEDO BOATS

12 Ex-U.S.S.R. "P 6" Type

Displacement, tons 75 standard; 100 full load
Dimensions, feet 88 x 21 x 6
Guns 4—25 mm AA (two twin)
Tubes 2—21 in (two single)
Main engines Speed = 45 knots

12 Ex-U.S.S.R. "P 4" Type

Displacement, tons 50
Dimensions, feet 85.3 x 20 x 6
Guns 4—25 mm AA (2 twin)
Main engines Diesels; 2 000 bhp = 42 knots

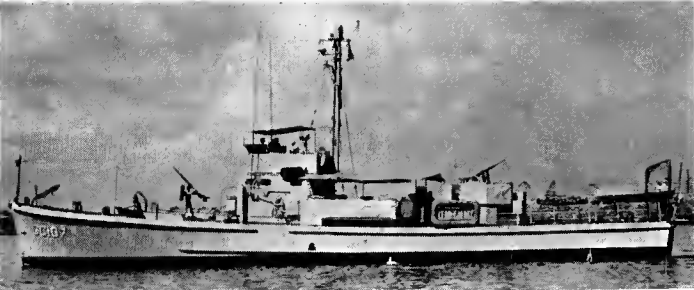
Former Soviet motor torpedo boats, transferred from the USSR in 1962-64.

COASTGUARD CUTTERS (Guardacostas)

HABANA GC 107 (ex-SC 1291) ORIENTE GC 104 (ex-SC 1000)
LAS VILLAS GC 106 (ex-SC 1290) PINAR DEL RIO GC 108 (ex-SC 1301)

Displacement, tons	95
Dimensions, feet	107.5 wl; 111 oa × 17 × 6.5
Guns	2—20 mm AA
Main engines	GM diesels; 2 shafts; 1 000 bhp = 15 knots

Built in the United States by Dingle Boat Works (*Oriente*), W. A. Robinson, Inc, Ipswich, Mass. (*Havana* and *Las Villas*), and Perkins & Vaughan, Inc, Wickford, RI (*Pinar del Rio*). *Camaguey* GC 105, was removed from the effective list in 1960.



HABANA Cuban Navy, Official

LEONCIO PRADO GC 101

Displacement, tons	80
Dimensions, feet	110 × 17.7 × 6.2
Guns	1—20 mm AA
Main engines	2 sets 8-cycle, 2 stroke diesels; 1 000 bhp = 15 knots
Oil	2 232 gallons for a cruising radius of 16 000 miles

Built at Havana. Launched in 1946. Of wooden hulled construction.

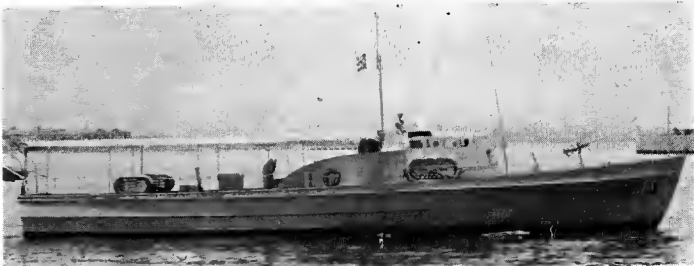


LEONCIO PRADO Added 1966, Cuban Navy, Official

GC 11 (ex-USCGC 83351) GC 13 (ex-USCGC 83385) GC 14 (ex-USCGC 83395)

Displacement, tons	45
Dimensions, feet	83 × 16 × 4.5
Guns	1—20 mm AA
Main engines	2 Sterling Viking petrol motors; 1 200 hp = 18 knots
Complement	12

Former CS of same numbers. Built in USA. Ex-Coast Guard Cutters. Launched in 1942-43. Of wooden hulled construction. Received from US Navy in March 1943. Rated as *Guardacostas*, 83 ft. GC 12 and GC 22 were disposed of.



GC 13 Cuban Navy, Official

GC 32 (ex-USCGC 56191) GC 33 (ex-USCGC 56190) GC 34 (ex-USCGC 56192)

Displacement, tons	45
Dimensions, feet	83 × 16 × 4.5
Guns	1—20 mm AA
Main engines	2 Superior diesels; 460 bhp = 12 knots
Complement	12

Built in USA. Ex-Coast Guard Cutters. Launched in 1942-43. Of wooden hulled construction. A photograph of GC 32 appears in the 1955-56 to 1959-60 editions. GC 31 was disposed of.

DONOTIVO (ex-Capitan Fernandez Quevedo) GC 102

Displacement, tons	130
Dimensions, feet	101 × 18 × 7
Main engines	2 sets diesels; 360 bhp = 12 knots

Built at Havana. Launched in 1932. Photograph in 1947-48 to 1959-60 editions.

MATANZAS GC 103

Displacement, tons	80
Dimensions, feet	100 × 18 × 6
Guns	1—1 pdr
Main engines	2 Fairbanks Morse diesels; 180 bhp = 12 knots

Wooden hulled. Built at Havana. Launched in 1912. A photograph appears in the 1947-48 to 1959-60 editions. Both of the above are rated *Guardacostas Auxiliares*.

MOTOR LAUNCHES (Ex-M.T.Bs)

R 41 (ex-PT 715) R 42 (ex-PT 716)

Displacement, tons	35
Dimensions, feet	71 × 19.2 × 5
Guns	2 MG
Main engines	2 Packard gas engines; 3 shafts; 3 600 bhp = 35 knots

Former US motor torpedo boats of the PT type. Built in the USA by Annapolis Yacht Yard Inc, Annapolis, Md. Launched on 9 July 1945 (R 41) and 17 July 1945 (R 42). Sunk during a hurricane on 5 Oct 1948, but were salvaged and put into service as sea-air rescue craft. Rated as *Buques-Auxiliares*, ex-*Torpederos*. Sister R 43 sank on 6 May 1961 after hitting a submerged object off Western Cuba.



R 41 Added 1966, Cuban Navy, Official

AUXILIARY PATROL CRAFT

SV 7 SV 8 SV 9 SV 10 SV 12 SV 14

Dimensions, feet	Length 40
Guns	1—50 cal MG
Main engines	2 GM diesels; speed 25 knots

Later boats of the SV type assigned to naval stations for coastal vigilance, to deal with, contraband, and for auxiliary services, rescue and navigation. Equipped with radar.

SV 1 SV 2 SV 3 SV 4 SV 5 SV 6

Displacement, tons	6.15
Dimensions, feet	32 × 10 × 2.8
Main engines	2 Chrysler Crown; 230 bhp = 18 knots

Auxiliary patrol boats for port vigilance, launched in 1953. A photograph of SV 6 appears in the 1957-58 edition. Seven YP type patrol craft were delivered to Cuba, having been built at Annapolis, Maryland USA, during 1956. Three more were delivered later.

LIGHTHOUSE TENDERS

ENRIQUE COLLAZO (ex-Joaquin Godoy)

Displacement, tons	815
Dimensions, feet	211 × 34 × 9
Main engines	Triple expansion; 2 shafts; 672 ihp = 8 knots

Built at Paisley, Scotland. Launched in 1906. Acquired in 1950 from Cuban mercantile marine. Rated as *Buque de Servicio de Faros*. A photograph appears in the 1953-54 to 1957-58 editions.

BERTHA

Displacement, tons	98
Dimensions, feet	104 × 19 × 11
Main engines	2 Gray Marine diesels; 450 bhp = 10 knots

Launched in 1944. Pennant No. SF 10. A photograph appears in the 1957-48 edition.

AUXILIARY VESSELS (Buques-Auxiliares)

GRANMA A 11

Yacht which landed in Cuba on 2 Dec 1956 with Dr Fidel Castro and the men who began the liberation war. Historical vessel incorporated into the Navy as an auxiliary. The former Presidential Yacht *10 de Marzo* (ex-*Wakitty*) was removed from the list.

A1 A2 A3

Displacement, tons	60
Dimensions, feet	74 × 15 × 5
Guns	1 MG
Main engines	2 diesel engines

Formerly yachts. A photograph of A3, appears in the 1954-55 to 1957-58 editions.

RESCUE AND SALVAGE VESSEL

10 DE OCTUBRE (ex-ATR 4)

Displacement, tons	852 standard; 1 315 full load
Dimensions, feet	155 wl, 165.5 oa × 33.3 × 16
Main engines	Triple expansion; 1 600 ihp = 12 knots
Boilers	2 Babcock & Wilcox D-type; oil burning

Former US ocean rescue tug. Built in the USA. Launched in 1943. Largely of wooden construction. Guns removed. Pennant No. RS 210. Rated as *Buque de Rescate y Salvamento*. Sister ship *20 de Mayo* was removed from the effective list.

CYPRUS

PATROL BOATS. There are two (a third was destroyed after attack by Turkish aircraft on 8 Aug 1964 and beached near Xeros harbour) of the German R-boat type, built in 1943, of 130 tons carrying a 40 mm AA gun and a 20 mm AA gun at a speed of 18 knots; six MTBs of the Soviet P-4 class transferred to Cyprus, four in Oct 1964 and two in Feb 1965; and ten small patrol boats of 50 tons with one or two 20 mm guns.

DENMARK

Administration

Commander in Chief:
Vice-Admiral S. Thstrup, RDN
Chief of Naval Staff:
Rear-Admiral O. Brink-Lund, RDN

Diplomatic Representation

Naval Attaché, London:
Captain H. Nørgaard, RDN
Naval Attaché, Washington:
Captain O. Felding, RDN

Strength of the Fleet

- 4 Submarines (Diesel Powered)
- 6 Frigates (4 for Fishery Protection)
- 4 Minelayers
- 4 Corvettes
- 4 Coastal Minelayers
- 8 Coastal Minesweepers
- 9 Seaward Defence Craft
- 16 Motor Torpedo Boats
- 18 Inshore Minesweepers
- 10 Landing Craft
- 16 Support Ships and Service Craft

Navy Estimates

Kr.		Kr.	
1961-62:	177,100,000	1964-65:	279,100,000
1962-63:	210,100,000	1965-66:	291,500,000
1963-64:	231,000,000	1966-67:	371,900,000

Personnel

January 1967: 6,900 officers and men

Mercantile Marine

Lloyd's Register of Shipping:
1,005 vessels of 2,839,367 tons gross

SUBMARINES

2 New Construction "Narhvalen" Class

Displacement, tons	370 surface; 450 submerged
Length, feet (metres)	144.4 (44.0)
Beam, feet (metres)	15 (4.6)
Draught, feet (metres)	12.5 (3.8)
Torpedo tubes	8—21 in (533 mm) bow, internal
Main engines	Diesels; 1 200 bhp surface, Elec. motors, 1 200 hp submerged
Speed, knots	10 surface; 17 submerged
Complement	21

These coastal submarines are similar to the German "U-4" class and are being built under licence at the Royal Dockyard, Copenhagen. They are conventionally powered, and fitted with schnorkel installation. "Tear-drop" hull. Originally numbered S 330 and S 331.

4 "Delfinen" Class

Displacement, tons	550 standard; 595 surface; 643 submerged
Length, feet (metres)	117.2 (54.0)
Beam, feet (metres)	15.4 (4.7)
Draught, feet (metres)	13.1 (4.0)
Torpedo tubes	4—21 in (533 mm)
Main engines	2 Burmeister & Wain diesels, 1 200 bhp surface, Electric motors, 1 200 hp submerged
Speed, knots	15 surface and submerged
Range, miles	4 000 at 8 knots
Complement	33

Built in the Royal Dockyard, Copenhagen. Engined with diesels of a new type. Equipped with Schnorkel.

PHOTOGRAPHS Photographs of *Delfinen* appear in the 1957-58 to 1963-64 editions. A photograph of *Spækhuggeren* appears in the 1966-67 edition.

2 FF (ex-DE) Type
"Peder Skram" Class

Displacement, tons	2 030 standard, 2 720 full load (officially revised figures)
Length, feet (metres)	354.3 (108) pp; 396.5 (112.6) oa
Beam, feet (metres)	39.5 (12)
Draught, feet (metres)	11.8 (3.6)
Guns, surface	4—5 in (127 mm) 38 cal US
Guns, AA	4—40 mm
A/S weapons	DC
Main engines	CODAG; 2 shafts—2 GM 16 567 D diesels, 4 800 hp; 2 Pratt & Whitney PWA GG 4A-3 gas turbines, 44 000 hp total output
Speed, knots	28 designed; over 30 max; 18 economical sea
Complement	112

Fast frigates of Danish design built at Helsingør. They were to have been armed, additionally to guns, with three 21 inch torpedo tubes and the "Terne" anti-submarine weapon. There is space on the quarter deck for possible future surface-to-air guided missile launcher installation.

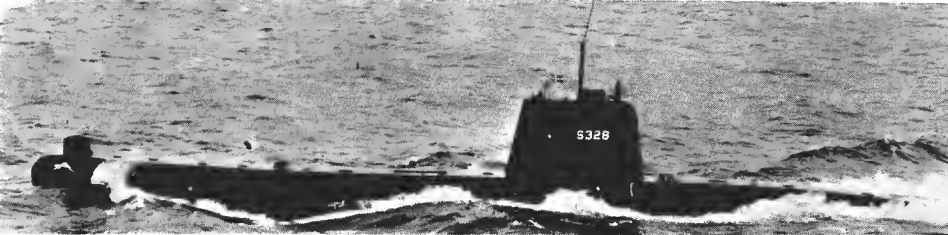
PENNANT NOS. The pennant numbers allocated originally were D 320 (see illustration in the 1963-64 to 1965-66 editions) and D 321, when they were designated DE (Destroyer Escorts). US/NATO procurement numbers PC 1644 and PC 1645, respectively.

PHOTOGRAPHS. The 1966 photograph was taken on propelling machinery sea trials during a shake down cruise and before much of the designed equipment was installed.

DISPOSALS OF "HUNT" CLASS

Of the three former British fast frigates or escort destroyers of the "Hunt" class, *Rolf Krake* (ex-HMS *Calpe*) and *Valdemar Sejre* (ex-HMS *Exmoor*) were declared for disposal in 1963, and *Esbern Snare* (ex-HMS *Blackmore*) was officially stricken from the Navy List in 1966.

Name	No.	Laid down	Launched	Completed
NARHVALEN	S 320	16 Feb 1965		
NORDKAPEREN	S 321	20 Jan 1966		



TUMLEREN

1966, Skyfotos

Name	No.	Laid down	Launched	Completed
DELFINEN	S 326	1 July 1954	4 May 1956	16 Sep 1958
SPÆKHUGGEREN	S 327	1 Dec 1954	20 Feb 1957	27 June 1959
SPRINGEREN	S 329	3 Jan 1961	26 Apr 1963	22 Oct 1964
TUMLEREN	S 328	22 May 1956	22 May 1958	15 Jan 1960



SPRINGEREN

1967, Royal Danish Navy, Official

FAST FRIGATES

Name	No.	Builders	Laid down	Launched
HERLUF TROLLE	F 353	Helsingør J. & M.	18 Dec 1964	8 Sep 1965
PEDER SKRAM	F 352	Helsingør J. & M.	25 Sep 1964	20 May 1965



PEDER SKRAM

1966, Royal Danish Navy, Official



PEDER SKRAM

1967, Royal Danish Navy, Official

FRIGATES

"Hvidbjørnen" Class

FF Type

Displacement, tons	1 345 standard; 1 650 full load
Length, feet (metres)	219.8 (67.0) pp; 238.2 (72.6) oa
Beam, feet (metres)	38.0 (11.6)
Draught, feet (metres)	16 (4.9)
Aircraft	1 Alouette III helicopter
Guns, dual purpose	1—3 in (76 mm)
Main engines	4 GM 16—567C diesels; 6 400 bhp; 1 shaft
Speed, knots	18
Range, miles	6 000 at 13 knots
Complement	75

Ordered in 1960-61. Of frigate type for fishery protection and surveying duties in the North Sea, Faroe Islands, and Greenland waters. They are equipped with a helicopter platform aft. The prototype ship of the class was built by Aarhus Flydedok og Maskinkompagni.

PHOTOGRAPHS. A starboard bow view of *Hvidbjørnen* appears in the 1963-64 edition and a port quarter view of *Ingolf* in the 1964-65 to 1966-67 edition

DISPOSALS OF "RIVER" CLASS

Of the two former British frigates of the "River" class, *Niels Ebbesen* (ex-HMS *Annan*) was scrapped in 1963, and *Holger Danske* (ex-HMS *Mannow*) in 1959.

DISPOSALS OF "FLOWER" CLASS

The former British frigate of the "Flower" class, *Thetis* (ex-HMS *Geranium*) was discarded in 1963.

DISPOSALS OF "HUITFELDT" CLASS

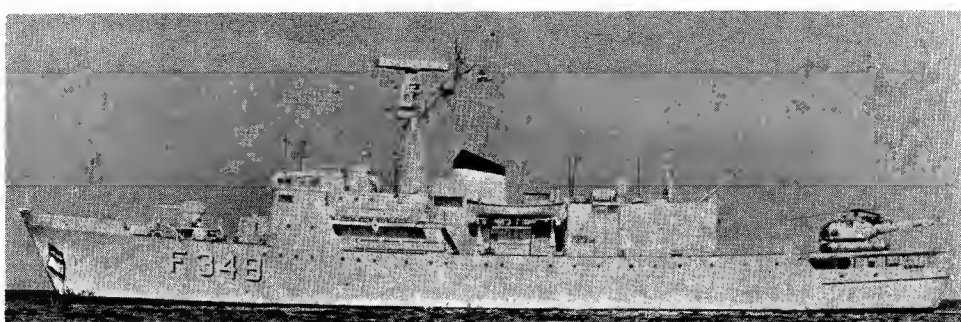
Of the two patrol vessels, formerly coastal destroyers, of the "Huitfeldt" class, *Huitfeldt* (ex-*Nymfen*) was discarded in 1965, and *Willemoes* (ex-*Najaden*) was officially deleted from the Navy List in 1966. Both were scrapped at Antwerp in 1966.

Name	No.	Builders	Laid down	Launched	Completed
FYLLA	F 351	Aalborg Værft	27 June 1962	18 Dec 1962	10 July 1963
HVIDBJØRNEN	F 348	Aarhus Flydedok	4 June 1961	23 Nov 1961	15 Dec 1962
INGOLF	F 350	Svendborg Værft	5 Dec 1961	27 July 1961	27 July 1963
VÆDDEREN	F 349	Aalborg Værft	30 Oct 1961	6 Apr 1962	19 Mar 1963



VÆDDEREN

1966, Royal Danish Navy, Official



HVIDBJØRNEN

1967, Royal Danish Navy, Official

MINELAYERS

"Falster" Class

Displacement, tons	1 900 full load
Length, feet (metres)	238 (72.5) pp; 252.6 (77.0) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	10 (3.0)
Guns, dual purpose	4—3 in (76 mm), 2 twin mountings
Mines	400
Main engines	2 GM—567D 3 diesels; 4 800 shp
	2 shafts
Speed, knots	17
Complement	120

Minelayers of a novel Scandinavian-NATO design. Ordered in 1960-61. All are named after Danish islands.

The steel hull is flush decked with a raking stem, a full stern, and a prominent knuckle forward. The superstructure has a block outline surmounted by a squat streamlined funnel, two light lattice masts, high angle director control towers fore and aft and whip aerials. The hull is sub-divided by watertight bulkheads and flats to isolate damage, and has been specially strengthened for ice navigation.

PHOTOGRAPHS. Photographs of *Falster* appear in the 1964-65 to 1966-67 editions.

Name	No.	Builders	Laid down	Launched	Completed
FALSTER	N 80	Nakskov Skibsværft	12 Apr 1962	19 Sep 1962	7 Nov 1963
FYEN	N 81	Frederikshavn Værft	12 Apr 1962	3 Oct 1962	18 Sep 1963
MØEN	N 82	Frederikshavn Værft	4 Oct 1962	6 Mar 1963	29 Apr 1964
SJÆLLAND	N 83	Nakskov Skibsværft	17 Jan 1963	14 June 1963	7 July 1964



FYEN

1967, Royal Danish Navy, Official

"Triton" Class

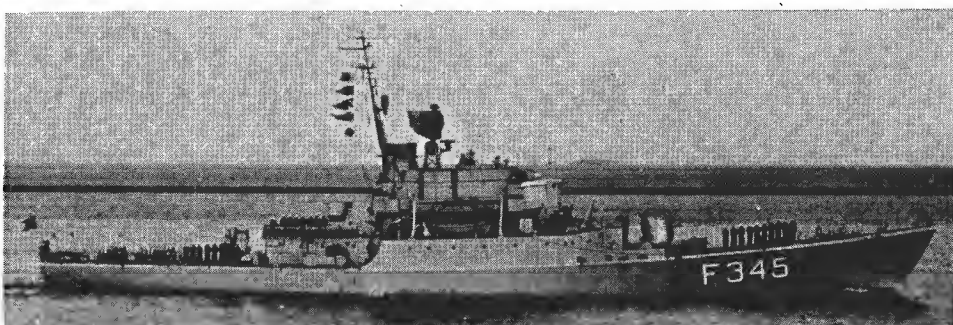
Displacement, tons	760 standard; 873 full load
Length, feet (metres)	242.8 (74.0) pp; 250.3 (76.3) oa
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	9 (2.7)
Guns, surface	2—3 in (76 mm)
Guns, AA	1—40 mm
A/S	2 Hedgehogs; 4 DCT
Main engines	2 Ansaldo Fiat 409T diesels
	4 400 bhp; 2 shafts
Speed, knots	18 designed, 20 max 16 sea
Range, miles	2 400 at 18 knots
Complement	110

All four vessels were built in Italy for the Danish Navy under the United States "offshore" account in the Mutual Defence Assistance Program.

CLASSIFICATION. Officially classified as corvettes in 1954, but have "F" pennant numbers like frigates.

PHOTOGRAPH. Of *Triton* appears in the 1956-57 to 1962-63 editions.

Name	No.	Builders	Launched	Transferred
BELLONA	F 344	Naval Meccanica, Castellammare	9 Jan 1955	31 Jan 1957
DIANA	F 345	Cantiere del Tirreno, Riva, Trigoso	19 Dec 1954	30 July 1955
FLORA	F 346	Cantiere del Tirreno, Riva, Trigoso	25 June 1955	28 Aug 1956
TRITON	F 347	Cantiere Navali di Taranto	12 Sep 1954	10 Aug 1955



DIANA

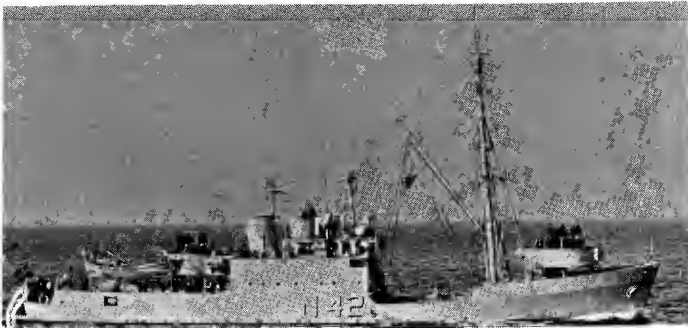
Added 1966, courtesy Dr. Ian S. Pearsall

COASTAL MINELAYERS

LANGELAND N 42

Displacement, tons 309.5 standard; 323 full load
Dimensions, feet 133.5 oa; 128.2 pp x 23.7 x 7.2
Guns 2—40 mm. 2—20 mm Madsen
Main engines Diesel; 2 shafts; 385 bhp = 11.6 knots
Complement 37

Built at the Royal Dockyard, Copenhagen. Laid down in 1950. Launched on 17 May 1950. Completed in 1951.



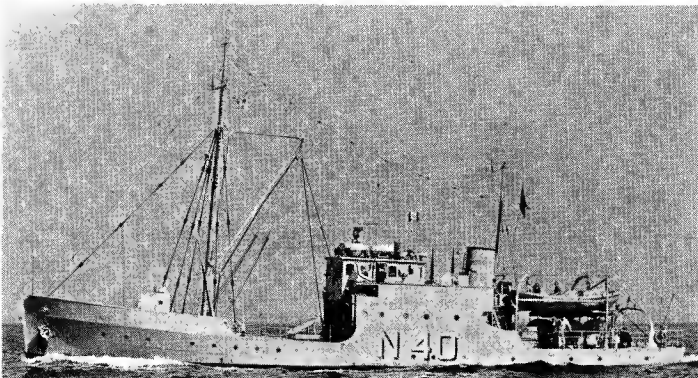
LANGELAND 1966, Royal Danish Navy, Official

2 "Lougen" Class

LAALAND N 40

Displacement, tons 240 standard; 260 full load
Dimensions, feet 105.5 x 21.2 x 6.5
Guns 2—20 mm AA
Main engines 8. & W. diesel; 2 shafts; 350 bhp = 10 knots
Complement 31

Built at the Royal Dockyard, Copenhagen. Both laid down in 1940, launched in 1941 and completed in 1946. A photograph of Lougen appears in the 1965-66 and 1966-67 editions.

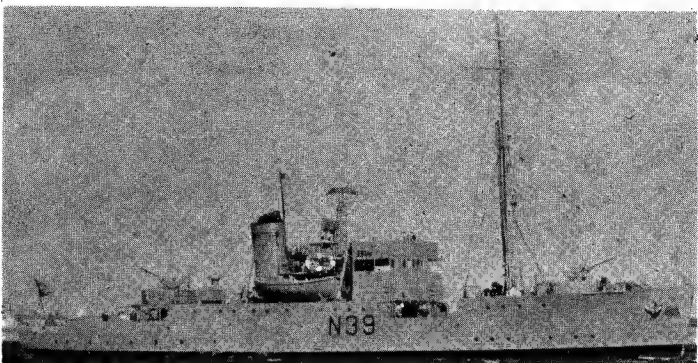


LAALAND 1967, Royal Danish Navy, Official.

LINDORMEN N 39

Displacement, tons 604 standard; 645 full load
Dimensions, feet 175.5 oa; 167.2 pp x 29 x 8
Guns 2—40 mm AA; 2 MG
Mines 150
Main engines Triple expansion; 2 shafts; 950 ihp = 12 knots
Boilers 2 Thornycroft 3-drum type
Complement 66

Built at the Royal Dockyard, Copenhagen. Laid down in 1939. Launched on 30 Mar 1940. Completed in 1940. Scuttled in Copenhagen Harbour on 29 Aug 1943, but was salvaged and refitted with a new rig.



LINDORMEN 1966, Royal Danish Navy, Official

DISPOSALS
The coastal minelayers Beskytteren, N 60 (ex-US LSM 390, and Vindhunden, N 61 (ex-US LSM 392), were discarded in 1965.

COASTAL MINESWEEPERS

8 "Sund" Class

AARØSUND (ex-AMS 127) M 571 GULDBORGSUND (ex-MS-C 257) M 575
ALLSUND (ex-AMS 128) M 572 OMØSUND (ex-MS-C 221) M 576
EGERSUND (ex-AMS 129) M 573 ULVSUND (ex-MS-C 263) M 577
GRØNSUND (ex-MS-C 256) M 574 VILSUND (ex-MS-C 264) M 578

Displacement, tons 350 standard; 376 full load
Dimensions, feet 138 pp; 144 oa x 27 x 8.5
Guns 2—20 mm
Main engines Diesels; 2 shafts; 1 200 bhp = 13 knots
Complement 35

MSC (ex-AMS) 60 class NATO coastal minesweepers all built in USA. Completed in 1954-56. Photographs of Aarøsund appear in the 1956-57 to 1965-66 editions. Aarøsund was transferred on 24 Jan 1955, Allsund on 5 Apr 1955, Egernsund on 3 Aug 1955, Grønsund on 21 Sep 1956, Guldborgsund on 11 Nov 1956, Omøsund on 20 June 1956, Ulvsund on 20 Sep 1956 and Vilsund on 15 Nov 1956.



OMØSUND 1966, Royal Danish Navy, Official

SEAWARD DEFENCE CRAFT

9 "Daphne" Class

Name	Pennant No.	Laid down	Launched	Completed
DAPHNE	P 530	1 Apr 1960	10 Nov 1960	19 Dec 1961
DRYADEN	P 531	1 July 1960	1 Mar 1961	4 Apr 1962
HAVFRUEN	P 533	15 Mar 1961	4 Oct 1961	20 Dec 1962
HAVMANDEN	P 532	15 Nov 1960	16 May 1961	30 Aug 1962
NAJADEN	P 534	20 Sep 1961	20 June 1962	26 Apr 1963
NEPTUN	P 536	1 Sep 1962	29 May 1963	18 Dec 1963
NYMFEN	P 535	1 Apr 1962	1 Nov 1962	4 Oct 1963
RAN	P 537	1 Dec 1962	10 July 1963	15 May 1964
ROTA	P 538	19 July 1963	25 Nov 1963	20 Jan 1965

Displacement, tons 170
Dimensions, feet 121.3 x 20 x 6.5
Guns 1—40 mm AA
A/S weapons 2—51 mm rocket launchers, depth charges
Main engines Diesels; 2 shafts; 2 600 bhp = 20 knots (plus 1 cruising engine; 100 bhp)
Complement 23

All built at the Royal Dockyard, Copenhagen. (For disposals of older patrol vessels of the "Sohesten" and "Krieger" classes see 1963-64 edition).



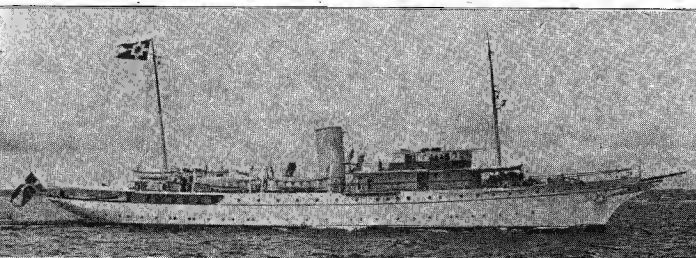
NAJADEN 1966, Stefan Terzibaschitsch

ROYAL YACHT

DANNEBROG A 540

Displacement, tons 1 130
Dimensions, feet 246 oa x 34 x 11.2
Guns 2—37 mm
Main engines 2 sets Burmeister & Wain 8 cylinder; 2 cycle diesels.
1 800 bhp = 14 knots
Complement 57

Built at the Royal Dockyard, Copenhagen. Launched in 1931.



DANNEBROG 1965, Royal Danish Navy, Official

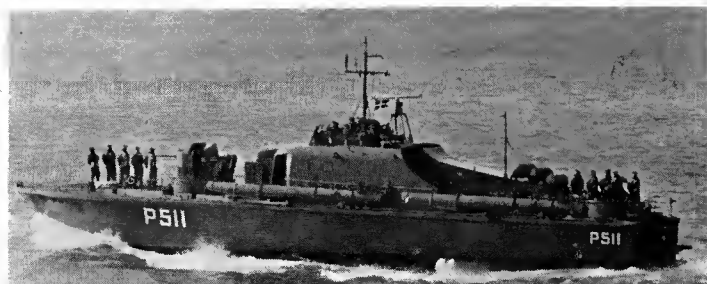
MOTOR TORPEDO BOATS

6 New Construction Gas Turbine FPB Type
"Søløven" Class

Name	Pennant No.	Laid down	Launched	Completed
SØLØVEN	P 510	27 Aug 1962	19 Apr 1963	June 1964*
SØRIDDEREN	P 511	4 Oct 1962	22 Aug 1963	June 1964*
SØBJØRGEN	P 512	9 July 1963	19 Aug 1964	Sep 1965
SØHESTEN	P 513	5 Sep 1963	31 Mar 1965	June 1966
SØHUNDEN	P 514	18 Aug 1964	12 Jan 1966	Dec 1966
SØLVEN	P 515	30 Mar 1965	27 Apr 1966	Mar 1967

Displacement, tons 95 standard; 114 full load
 Dimensions, feet 90 pp; 96 wl; 99 oa × 25.5 × 7
 Guns 2—40 mm Bofors AA
 Tubes 4—21 in (side)
 Main engines 3 Bristol Siddeley Proteus gas turbines; 3 shafts; 12 750 bhp = 54 knots
 Complement GM diesels on wing shafts for cruising = 10 knots
 29

The design is a combination of the "Brave" class hull form and "Ferocity" type construction. *Søløven* ("Sea Lion") and *Søridderen* ("Sea Knight") were built by Vosper Limited, Portsmouth, England (*delivered to the Royal Danish Navy on 12 and 10 Feb 1965, respectively); and the remaining four under licence by the Royal Dockyard, Copenhagen. A photograph of *Søløven* appears in the 1964-65 and 1965-66 editions.



SØRIDDEREN

1966, Dr. Giorgio Arra

4 Diesel FPB Type "Falken" Class

Name	Pennant No.	Laid down	Launched	Completed
FALKEN	P 506	1 Nov 1960	19 Dec 1961	4 Oct 1962
GLENTEN	P 507	3 Jan 1961	15 Mar 1962	15 Dec 1962
GRIJBEN	P 508	15 May 1961	18 July 1962	26 Apr 1963
HØGEN	P 509	1 Sep 1961	4 Oct 1962	6 June 1963

Displacement, tons 119
 Dimensions, feet 118 × 17.8 × 6
 Guns 1—40 mm AA; 1—20 mm AA
 Tubes 4—21 in (side)
 Main engines 3 diesels; 3 shafts; 9 000 bhp = 40 knots
 Complement 23

Ordered under US offshore procurement in the Military Aid Program. All built at the Royal Dockyard, Copenhagen. Named after birds. A photograph of *Falken* appears in the 1963-64 to 1965-66 editions.



GLENTEN

1966, Royal Danish Navy, Official

6 "Flyvefisken" Class

FLYVEFISKEN P 500	HAVKATTEN P 502	MAKRELEN P 504
HAJEN P 501	LAXEN P 503	SVÆRDFISKEN P 505

Displacement, tons 110
 Dimensions, feet 120 × 18 × 6
 Guns 1—40 mm AA; 1—20 mm AA
 Tubes 2—21 in
 Main engines 3 diesels; 3 shafts; 7 500 bhp = 40 knots
 Complement 22

Three built in Royal Dockyard, Copenhagen, three in Frederikssund Vaerft. All units are named after fishes. Ordered in 1952, laid down in 1953 and launched in 1954-55. A photograph of *Flyvefisken* appears in the 1956-57 to 1963-64 editions, and of *Hajen* in the 1964-65 and 1965-66 editions.



LAXEN

1966, Royal Danish Navy, Official

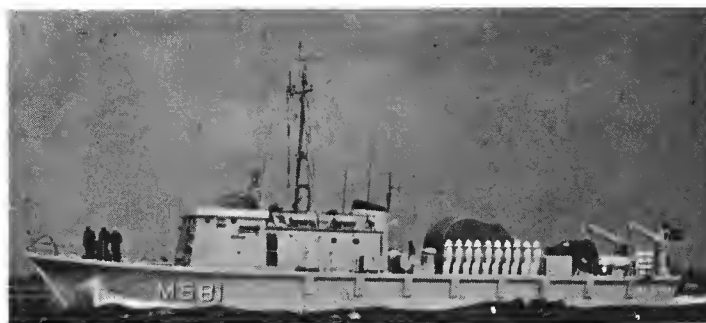
INSHORE MINESWEEPERS

4 MSI Type. "Vig" Class

Name	Pennant No.	Laid down	Launched	Completed
ASVIG	M 579	22 Apr 1959	11 May 1960	6 Sep 1961
MOSVIG	M 580	22 Apr 1959	14 Sep 1960	25 Oct 1961
SANDVIG	M 581	11 May 1960	1 Mar 1961	1 Feb 1962
SÆLVIG	M 582	14 Sep 1960	14 July 1961	30 Apr 1962

Displacement, tons 180
 Dimensions, feet 113.5 × 22.5 × 6.2
 Guns 2—20 mm AA
 Main engines 2 diesels; 2 shafts; 11 000 bhp = 13 knots
 Complement 18

All built at the Royal Dockyard, Copenhagen. A photograph of *Asvig* appears in the 1962-63 to 1965-66 editions.



SANDVIG

1966, Stefan Terzibaschitch

6 "Asko" Class

ASKØ MHV 81 (ex-Y 386, ex-M 560, ex-MS 2)	HJORTØ Y 389 (ex-M 564, ex-MS 7)
BAAGØ Y 387 (ex-M 561, ex-MS 3)	LYØ Y 390 (ex-M 565, ex-MS 8)
ENØ MHV 82 (ex-Y 388, ex-M 562, ex-MS 5)	MANØ MHV 83 (ex-Y 391, ex-M 566 ex-MS 9)

Displacement, tons 74
 Dimensions, feet 78.8 × 21 × 5
 Guns 1—20 mm
 Main engines Diesel; 1 shaft; 350 bhp = 11 knots

Of wooden construction. All launched in 1941. Used by the Maritime Home Guard. Sister boat *Fæno*, MHV 69 (ex-M 563, ex-MS 6) was officially deleted from the list in 1967.

P67 3 "Alholm" Class

ALHOLM Y 369 (ex-MSK 1)	BIRKHOLM Y 370 (ex-MSK 2)
	ERTHOLM Y 371 (ex-MSK 3)

Displacement, tons 70
 Dimensions, feet 69 × 17 × 9
 Guns 1—20 mm AA
 Main engines Diesel; 120 bhp = 10 knots

Built by Frederikssund Vaerft. All launched in 1945. Used as patrol vessels.

P67 3 "Fyrholm" Class

FYRHOLM Y 372 (ex-MSK 4)	GRÆSHOLM Y 373 (ex-MSK 5)
	LINDHOLM Y 374 (ex-MSK 6)

Displacement, tons 68
 Dimensions, feet 65.7 × 16.8 × 7.5
 Main engines Diesel; 120 bhp = 9 knots

Built by Sydhavns Vaerft. All launched in 1944-45. Used as patrol vessels. A photograph of *Fyrholm* appears in the 1966-67 edition.

P67 2 "Klørdyb" Class

KLØRDYB M 569 (ex-ML 2)	VEJDYB M 570 (ex-ML 3)
--------------------------------	-------------------------------

Displacement, tons 21
 Dimensions, feet 50 × 13.8 × 3.2
 Main engines Speed = 9 knots

All launched in 1944. Officially classed as shallow water minesweepers. *Graadyb* was condemned on 4 Feb 1956. For other disposals see 1963-64 edition.

PATROL CRAFT (Orlogskuttere)

2 "Maagen" Class

MAAGEN (Y 384)	MALLEMUKKEN (Y 385)
-----------------------	----------------------------

Displacement, tons 190
 Dimensions, feet 88.5 × 21.7 × 9.5
 Guns 1—40 mm AA
 Main engines 385 hp; 1 shaft; speed 11 knots

Of steel construction. Built at Helsingør, laid down 15 Jan 1960, launched 1960.

P67 1 "Skarven" Class

TEJSTEN (Y 383)

Displacement, tons 130
 Dimensions, feet 82 × 20.7 × 9.4
 Guns 1—37 mm
 Main engines Alfa Diesel; 180 bhp = 9 knots

Of wooden construction. Built by Holbaek Skibsbyggeri. Launched 1951. Sister ship *Skarven*, Y 382, was disabled after grounding in the Faroes on 7 May 1966 and was officially deleted from the list. All three above for service in Greenland waters.

SURVEYING VESSELS (*Opmaalingskib*)**FREJA A 541**

Displacement, tons 322
 Dimensions, feet 124.8 pp; 134 oa × 25.2 × 7.2
 Main engines Triple expansion; 1 shaft; 300 ihp = 10.5 knots
 Boilers 1 cylindrical
 Oil fuel (tons) 15
 Complement 40

Built at Royal Dockyard, Copenhagen. Launched on 22 Dec 1938. The two 20 mm AA guns are not mounted while on survey service.



FREJA

1966, Royal Danish Navy, Official

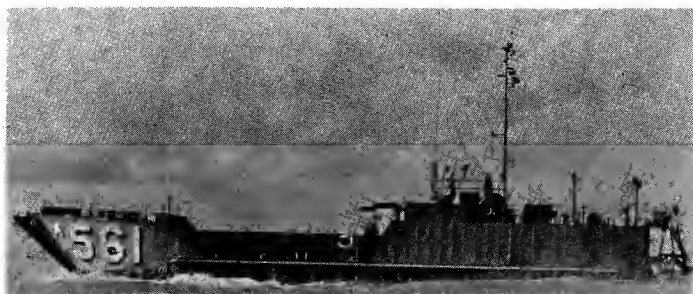
LANDING CRAFT

BALDER (ex-US LCU 715) A 543
BRAGE (ex-US LCU 810) A 544
HERMOD (ex-US LCU 1042) A 545
LOKE (ex-US LCU 1294) A 546
ODIN (ex-US LCU 649) A 561

THOR (ex-US LCU 765) A 562
TYR (ex-US LCU 1230) A 564
ULLER (ex-US LCU 1373) A 565
VALE (ex-US LCU 1383) A 566
VIDAR (ex-US LCU 1422) A 567

Displacement, tons 150 light; 315 full load
 Dimensions, feet 105 wl; 115.5 oa × 32.7 × 5.3 max
 Guns 2—20 mm AA
 Main engines Gray Marine diesels; 3 shafts; 675 bhp = 10 knots
 Complement 11

Landing Craft Utility transferred to the Royal Danish Navy from the USA, *Odin* and *Thor* on 10 Jan 1962, *Tyr*, *Uller*, *Vale* and *Vidar* in Jan 1963, and *Balder*, *Brage*, *Hermud* and *Loke* on 1 May 1963.



ODIN

1962, Royal Danish Navy, Official

ICEBREAKERS**DANBJØRN**

Displacement, tons 3 685
 Dimensions, feet 252 × 56 × 20
 Main engines Diesels; Electric drive; 11 880 bhp = 14 knots
 Complement 34

Built in 1965. Another new icebreaker of similar type is under construction.

ELBJØRN

Displacement, tons 893 standard; 1 400 full load
 Dimensions, feet 156.5 × 40.3 × 14.5
 Main engines Diesels, electric drive; 3 600 bhp = 12 knots

Built in 1953. A photograph appears in the 1956-57 to 1960-61 editions.

STOREBJØRN

Displacement, tons 2 540
 Dimensions, feet 197 × 49.2 × 19

Built in 1931. Icebreakers are controlled by the Ministry of Trade and Shipping.

LILLEBJØRN

Displacement, tons 1 000
 Dimensions, feet 144.3 × 36.5 × 18

Built in 1926. The small icebreaker *Mjolner* was stricken from the list in 1960.

ISBJØRN

Displacement, tons 1 675
 Dimensions, feet 170.7 × 40 × 22.3

Built in 1923. This vessel has two funnels. All the other icebreakers have only one.

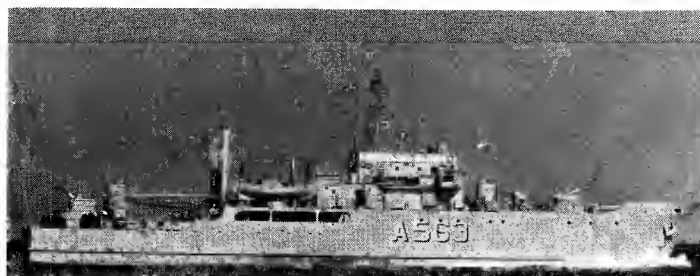
DEPOT AND REPAIR SHIPS**HJÆLPEREN** (ex-US LSM 500) A 563

Displacement, tons 1 030 standard; 1 170 full load
 Dimensions, feet 203.5 oa × 34.5 × 8.3
 Guns 2—40 mm
 Main engines Diesels; 2 shafts; 2 800 bhp = 12 knots
 Complement 60

Former United States medium landing ship. Built by Brown Shipbuilding Co, Houston, Texas. Laid down on 17 Mar 1945. Launched on 7 Apr 1945. Completed on 17 May 1945. Transferred to the Royal Danish Navy on 15 May 1953. Depot and Repair ship for motor torpedo boats.

DISPOSAL

The depot ship *Aegir*, ex-German *Tanga*, was officially deleted from the list in Jan 1967.



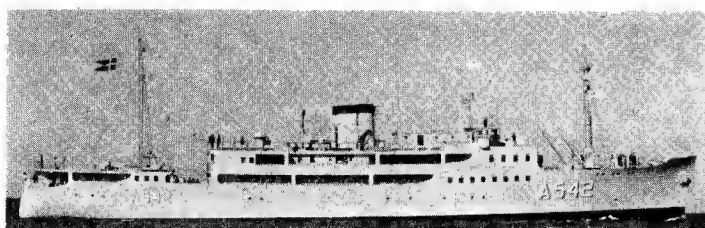
HJÆLPEREN

1967, Royal Danish Navy, Official

HENRIK GERNER (ex-M/S *Hammershus*) A 542

Displacement, tons 2 200 standard
 Dimensions, feet 252.7 × 40 × 18.3
 Guns 6—40 mm AA
 Main engines Burmeister & Wain diesel; speed = 15 knots
 Complement 230

Former Danish passenger ship. Built in 1936. Transferred to the Royal Danish Navy on 8 Jan 1964, refitted at the Royal Dockyard, Copenhagen, and commissioned as a depot ship for submarines.



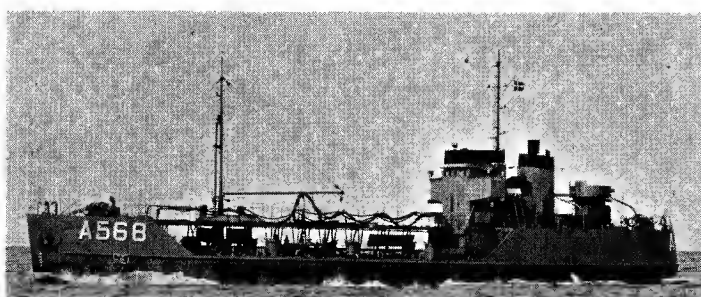
HENRIK GERNER

1966, Royal Danish Navy, Official

OILERS (*Tankfartøjer*)**RIMFAXE** (ex-US YO 226) A 568**SKINFAXE** (ex-US YO 229) A 596

Displacement, tons 422 light; 1 390 full load
 Dimensions, feet 174 oa × 32 × 13.2
 Main engines 1 GM diesel; 560 bhp = 10 knots
 Complement 23

Yard oilers transferred to the Royal Danish Navy from the USA on 2 Aug 1962. A photograph of *Skinfaxe* appears in the 1966-67 edition.



RIMFAXE

1967, Royal Danish Navy, Official

TENDERS**HOLLÆNDERDYBET** (ex-Den Lille Havfrue)**KONGEDYBET** (ex-Kirsten Pill)

Displacement, tons 158 full load; 88 gross
 Dimensions, feet 150 × 19 × 7.2
 Main engines Diesel

Both launched in 1935. Used for transport. Nos. A 554, A 555, respectively.

DOMINICAN REPUBLIC

Administration

Vice-Chief of Naval Staff:
Captain Ramon Emilio Jimenez Hijo

Under Secretary For The Navy:
Captain Sergio de Jesus Diaz Toribio

Chief of Naval Staff:
Commodore Francisco Rivera Caminero

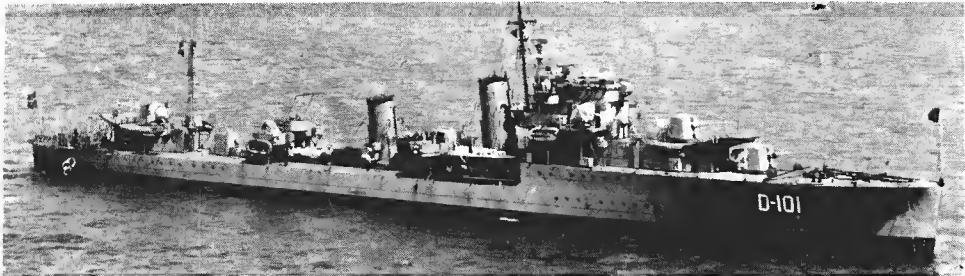
Personnel
1967: 4 000 officers and men

Strength of the Fleet
2 Destroyers
3 Frigates
5 Corvettes
10 Patrol Vessels
16 Auxiliary and Service Craft

DESTROYERS (Destructoros)

Name	Pennant No.	Builders	Laid down	Launched	Completed
DUARTE (ex-Trujillo, ex-HMS Hotspur)	D 101	Scotts' S.B. & Eng. Co. Ltd., Greenock	27 Feb 1935	23 Mar 1936	29 Dec 1936

Displacement, tons 1 340 standard; 2 020 full load
Length, feet (metres) 312 (95.1) pp; 320 (97.5) wl
323 (98.5) oa
Beam, feet (metres) 33 (10.0)
Draught, feet (metres) 15 (4.6) max (props)
Guns, surface 3—4.7 in (120 mm)
Guns, AA 6—20 mm
A/S 4 DCT
Torpedo tubes 4—21 in (533 mm)
Boilers 3 Admiralty 3-drum
Main engines Parsons geared turbines
34 000 shp; 2 shafts
Speed, knots 36; sea speed 31
Radius, miles 5 700 at 15 knots
Oil fuel (tons) 455
Complement 145



DUARTE

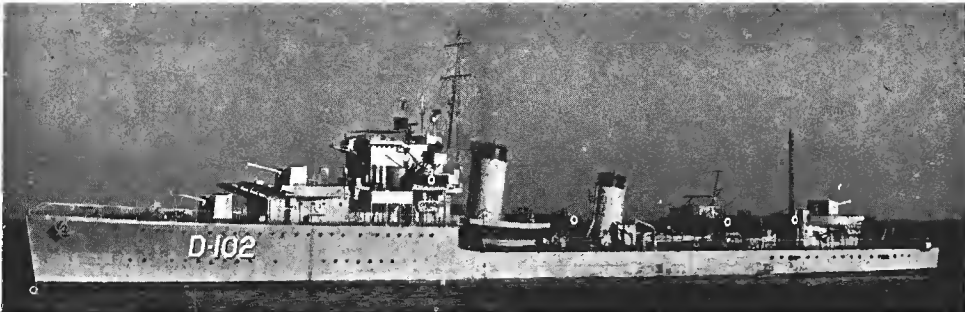
Added 1966

Name	Pennant No.
SANCHEZ (ex-Generalissimo, ex-HMS Fame)	D 102

Builders
Vickers-Armstrongs, Barrow

Laid down 5 July 1933
Launched 28 June 1934
Completed 26 Apr 1935

Displacement, tons 1 350 standard; 2 060 full load
Length, feet (metres) 318.3 (97.0) pp; 326 (99.4) wl
329 (100.3) oa
Beam, feet (metres) 33.3 (10.1)
Draught, feet (metres) 15 (4.6) max (props)
Guns, surface 3—4.7 (120 mm)
Guns, AA 6—20 mm
A/S 4 DCT
Torpedo tubes 4—21 in (533 mm)
Boilers 3 Admiralty 3-drum
Main engines Parsons geared turbines
34 000 shp
Speed, knots 36, sea speed 31
Radius, miles 6 000 at 15 knots
Oil fuel (tons) 480
Complement 145



SANCHEZ

1961, Official

Former British destroyer of the "F" flotilla which served in the Royal Navy until Feb 1949 when she was transferred and renamed *Generalissimo*. Renamed *Sanchez* in 1962.

FRIGATES (Fragatas)

Name	Pennant No.	Builders	Laid down	Launched	Completed
CAP. GENERAL PEDRO SANTANA (ex- <i>Presidente Peynado</i> , ex-USS <i>Pueblo</i> , PF 13)	F 104	Kaiser S.Y. Richmond, Cal.	14 Nov 1943	20 Jan 1944	27 May 1944
GREGORIO LUPERON (ex- <i>Presidente Troncoso</i> , ex-USS <i>Knoxville</i> , PF 64)	F 103	Leatham D. Smith S.B. Co, Wis.	15 Apr 1934	10 July 1943	29 Apr 1944

2 Ex-U.S. "River" Type

Displacement, tons 1 430 standard; 2 415 full load
Length, feet (metres) 298 (90.8) wl; 304 (92.7) oa
Beam, feet (metres) 37.5 (11.4)
Draught, feet (metres) 12 (3.7)
Guns, surface 3—3 in (76 mm)
Guns, AA 4—40 mm (2 twin); 6—20 mm;
4—0.5 in (12.7 mm) MG
Boilers 2 three-drum type
Main engines Triple expansion
5 500 ihp; 2 shafts
Speed, knots 19
Oil fuel (tons) 760
Complement 140



GREGORIO LUPERON

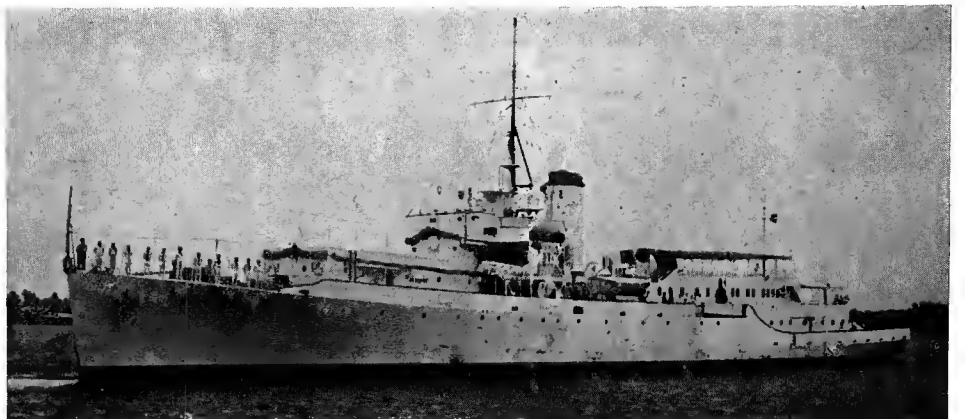
Official

Former United States "Tacoma" class frigates. Transferred to Dominican Navy in 1949. Renamed in 1962.

1 Ex-Canadian "River" Type

MELLA (ex-*Presidente Trujillo*, ex-HMCS *Carlplace*)

Displacement, tons 1 400 standard; 2 125 full load
Length, feet (metres) 301.5 (91.9)
Beam, feet (metres) 36.7 (11.2)
Draught, feet (metres) 12 (3.7) mean
Boilers 2 three-drum
Main engines Triple expansion
5 500 ihp; 2 shafts
Speed, knots 20
Oil fuel (tons) 645
Complement 195 (15 officers, 130 men, 50 midshipmen)



MELLA

1958, Official

Built by Davie SB & Repairing Co, Lauzon. Launched 6 July 1944. Completed 13 Dec 1944. Transferred to the Dominican Navy in 1946. Original Dominican frigate. Modified for use as Presidential Yacht with extra accommodation and deck-houses built up aft. Pennant No. as a frigate was F 101, but as the Presidential Yacht she no longer wears it. Renamed *Mella* in 1962. Also used for training midshipmen.

CORVETTES (*Corbetas*)

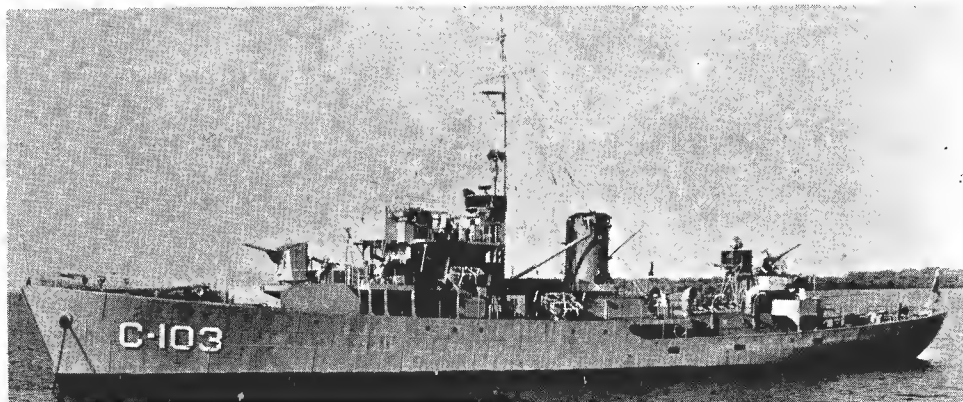
Name	Pennant No.	Builders	Launched	Completed
CRISTOBAL COLON (ex-HMCS <i>Lachute</i>)	C 101	Morton Ltd, Quebec City, P.Q.	9 June 1944	26 Oct 1944
GERARDO JANSEN (ex-HMCS <i>Peterborough</i>)	C 104	Kingston Shipbuilding Co, Kingston, Ontario	15 Jan 1944	1 June 1944
JUAN ALEJANDRO ACOSTA (ex-HMCS <i>Louisbourg</i>)	C 102	Morton Ltd, Quebec City, P.O.	13 July 1943	13 Dec 1943
JUAN BAUTISTA CAMBIASO (ex-HMCS <i>Belleville</i>)	C 103	Kingston Shipbuilding Co, Kingston, Ontario	17 June 1944	19 Oct 1944
JUAN BAUTISTA MAGGIOLO (ex-HMCS <i>Riviere du Loup</i>)	C 105	Morton Ltd, Quebec City, P.O.	2 July 1943	21 Nov 1943

5 Ex-Canadian "Flower" Type

Displacement, tons	1 060 standard; 1 350 full load
Length, feet (<i>metres</i>)	193 (58.8) pp; 208 (63.4) oa
Beam, feet (<i>metres</i>)	33 (10.0)
Draught, feet (<i>metres</i>)	14.5 (4.4) mean
Guns, surface	C. Colon: 1—3 in (76 mm); Others: 1—4 in (102 mm)
Guns, AA	C. Colon: 2—40 mm (twin); 6—20 mm; 4—0.5 in MG (2 twin) Others: 1—40 mm; 6—20 mm; 2—0.5 in MG
Boilers	2 three-drum type
Main engines	Triple expansion; 2 750 ihp
Speed, knots	16
Oil fuel (tons)	282
Complement	53

All built in Canadian shipyards under the Emergency Construction programme during the Second World War. Transferred to the Dominican Navy in 1947. The sixth ship, *Asbestos*, was wrecked en route from Canada.

PHOTOGRAPHS of *Juan Maggiolo* appear in the 1951-52 to 1957-58 editions, of *Cristobal Colon* in the 1951-52 to 1960-61 editions, and of *Gerardo Jansen* in the 1961-62 to 1965-66 editions.



JUAN BAUTISTA CAMBIASO

1966, Official

PATROL VESSELS (*Patrulleros*)

2 Ex-U.S. MSF Type

SEPARACION, (ex-USS *Signet*, MSF 302) BDM 454
TORUGERO, (ex-USS *Skirmish*, MSF 303) BDM 455

Displacement, tons	650 standard; 945 full load
Dimensions, feet	180 wl; 184.5 oa × 33 × 10
Guns	1—3 in dp; 4—40 mm AA
Main engines	Diesel; 2 shafts; 1 710 bhp = 15 knots

Former US fleet minesweepers of the "Admirable" class. Purchased on 13 Jan 1965.

2 Ex-U.S. PC Type

27 DE FEBRERO (ex-USS *PC* 613) P 101 27 Oct 1942
CONSTITUCION (ex-*Cibas*, ex-Engage, ex-USS *PC* 1597) P 103 11 July 1942

Displacement, tons	280 standard; 450 full load
Dimensions, feet	170 wl; 173.7 × 23 × 7.5
Guns	1—3 in, 50 cal; 1—40 mm AA; 1—20 mm AA
Main engines	Diesels; 2 shafts; 3 750 bhp = 22 knots
Complement	50

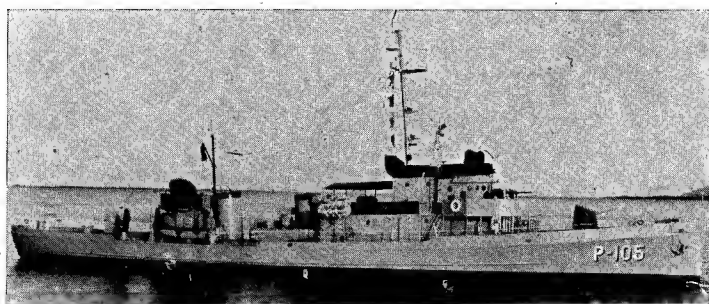
Ex-United States patrol vessels (submarine chasers). Launch dates above. Built by Gibbs Gas Engine Co, Jacksonville, Fla; and Dravo Corp, Neville Island, Pa, respectively, laid down on 7 July 1942, and 26 Feb 1942, completed on 2 June 1943, and 22 Oct 1942. Renamed in 1962. A photograph of *27 de Febrero* appears in the 1966-67 edition. Both of these ships are scheduled to be discarded. Sister ship *Patria*, P 102 (ex-*Capitan Wenceslas Arvels*, Ex-USS *PC* 1202) was discarded in 1962.

3 Ex-U.S.C.G. WPC Type

INDEPENDENCIA (ex-USCGC *Icarus*) P 105 1931
LIBERTAD (ex-*Rafael Atoa*, ex-USCGC *Thetis*) P 106 1931
RESTAURACION (ex-USCGC *Galathea*) P 104 1932

Displacement, tons	334-337
Dimensions, feet	165 × 25.2 × 9.5
Guns	1—3 in; 1—40 mm; 1—20 mm
Main engines	2 Diesels; 1 280 bhp = 15 knots
Complement	35 (<i>Independencia</i> , 4 officers, 25 men)

Ex-United States Coastguard Cutters. *Independencia* was completed by Bath Iron Works in 1932, and *Restauracion* by John H. Machis & Co, Camden, NJ, in 1933.



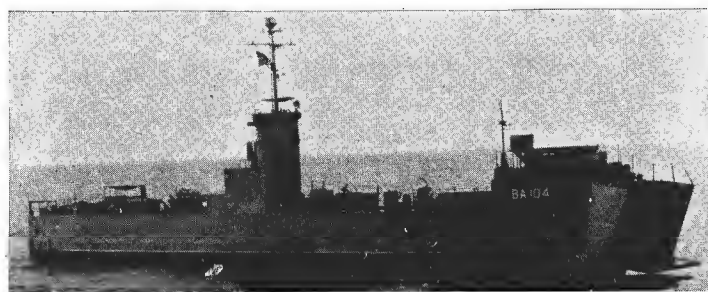
INDEPENDENCIA

1964, Dominican Navy, Official

MEDIUM LANDING SHIP(*Barcazas de Desembarco*)1 Ex-U.S. LSM Type. Rated as Auxiliary (*Buque Auxiliar*)**SIRIO** (ex-USS *LSM* 483) BA 104

Displacement, tons	734 standard; 1 100 full load
Dimensions, feet	196 wl; 203.5 oa × 34 × 10 mean
Main engines	2 General Motors diesels; 2 shafts; 1 800 bhp = 14 knots
Oil fuel (tons)	164
Complement	30

Ex-United States *LSM* (Medium Landing Ship). Built by Brown Shipbuilding Co, Houston, Texas. Laid down on 17 Feb 1945, launched on 10 Mar 1945 and completed on 13 Apr 1945. Transferred to the Dominican Navy in 1960.



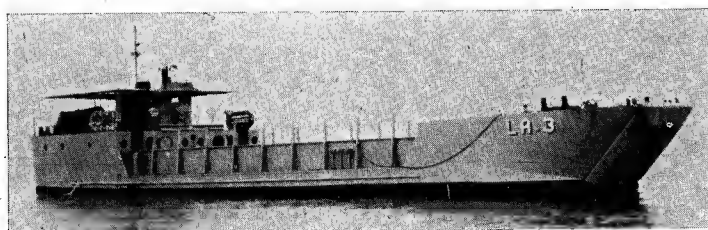
SIRIO

1964, Dominican Navy, Official

UTILITY LANDING CRAFT(*Barcazas de Desembarco*)2 LCT Type. Rated as Auxiliary Landing Craft
(*Lanchas Auxiliares*)**ENRIQUILLO** (ex-17 de Julio) LA 3**SAMANA** LA 2

Displacement, tons	150 standard; 310 full load
Dimensions, feet	105 wl; 119.5 oa × 36 × 3 mean
Guns	1 AA, 50 cal
Main engines	3 General Motors diesels; 441 bhp = 8 knots
Oil fuel (tons)	80
Complement	17

Both built by Astilleros Navales Dominicanos in 1957-58. The new *Samana*, LA 2, replaced the *Samana* LA 2 lost in bad weather. *Enriquillo* (ex-17 de Julio) was launched on 24 Oct 1957. Renamed in 1962.



ENRIQUILLO

1964, Dominican Navy, Official

COASTGUARD VESSELS (Guardacostas)

1 U.S. PGM Type

BETELGEUSE (ex-US PGM 77) GC 102

Displacement, tons	107
Dimensions, feet	94.5 x 20.7 x 5
Guns	1—40 mm
Main engines	4 diesels; 2 shafts; 2 200 bhp = 21 knots
Radius, miles	1 500 at 10 knots

Built in the USA for transfer to the Dominican Republic under the Military Aid Programme. Completed in 1966 by Peterson Builders. Transferred on 14 Jan 1966.

The former GC 102, *Las Carreras*, ex-*Sanchez*, ex-*Patria*, ex-*SC 1153*, and her sister boat GC 101, *30 de Marzo*, ex-*Mella*, ex-*Rosa*, ex-*SC 1351*, were discarded in 1966-67.

LAS CALDERAS (ex-Luberon) GC 9 BAHIA OCOA (ex-22 de Junio) GC 10

Displacement, tons	47 standard
Dimensions, feet	83 x 16.5 x 4.5
Guns	2—20 mm; 2 MG; 8 DC
Main engines	Diesel; 1 200 bhp = 23.5 knots

Built by Wheeler Shipyards, Brooklyn. Launched in 1943. Hulls are of wood. Ex-USCG cutters 56197 and 56198, respectively. Named in 1957. Renamed in 1962. GC 3, GC 4, GC 5, GC 6 and GC 7 were discarded in 1957.



BAHIA OCOA 1966, Official

DISPOSALS
Sister boat *Bahia Manzanillo*, GC 11 ex-16 de Agosto, ex-USCG cutter 56199) was discarded in 1962.
The coastguard vessel *Trinidad*, GC 8, was also discarded in 1962, and *Boya*, GC 2, in 1960.
The training ship *Duarte* (ex-*Nueva Tioditie*), GA 1 was discarded in 1962.

LIGHTHOUSE AND BUOY TENDER
(Buque de Faros y Boyas-Boyero)

CAPOTILLO (ex-Camillia) F8 101

Displacement, tons	337
Dimensions, feet	117 x 24 x 7.8
Main engines	2 Diesels; 880 bhp = 10 knots
Complement	40

Built in the United States in 1911. Acquired from the United States Coast Guard in 1949. A photograph of this ship appears in the 1957-58 edition.

MOTOR LAUNCH (Lancha Auxiliare)

MAIMON LA 5

Dimensions, feet	53 x 9 x 4
Main engines	2 motors; 500 hp = 14 knots
Complement	4

Acquired for the Hydrographic Service of the Navy in 1960.

DISPOSALS
The motor launch *Altogracia*, LA-1 (ex-*Laura*) was discarded in 1960, and *Najaya*, LA 4, in 1962.

RESCUE LAUNCHES (Lanchas de Rescate)

CAPITAN ALSINA R 101 CAPITAN MADURO LR 103

Displacement, tons	100 standard
Dimensions, feet	92 wl; 104.8 oa x 19.2 x 5.8
Guns	2—20 mm AA; 2 MG
Main engines	<i>Capitan Alsina</i> : Diesel; <i>Capitan Maduro</i> : 2 Packard engines; 2 shafts; 1 000 hp = 17 knots
Complement	20

Of wooden construction. All launched in 1944. Named as above in 1957. LR 102 was lost in 1956.



CAPITAN ALSINA Official

YACHT

PATRIA (ex-Angelita)

Four masted yacht with auxiliary engines. Presidential Yacht. Renamed *Patria* in 1964.

DISPOSALS
The auxiliary ships (*Buques Auxiliares*) *18 de Diciembre*, BA-101 (ex-US WPC 587), converted patrol vessel, and *Leonor*, BA-102 (ex-*Romanita*), were discarded in 1960.

OILERS

CAPITAN W ARVELO, 8T 4 (ex-USS YO 213)
CAPITAN BEOTEGUI, BT 5 (ex-US YO 215)

Displacement, tons	1 400 tons full load
Dimensions, feet	174 x 32
Main engines	525 shp
Capacity	6 570 barrels

Former United States self propelled fuel oil barges. Both built by Ira S. Bushey & Sons, Inc, Brooklyn, New York. Loaned by the USA in Mar 1964.

ULISES HEUREAUX (ex-24 de Octubre, ex-YO 2) BT 101

Displacement, tons	1 460
Measurement, tons	602 gross
Dimensions, feet	108 x 30 x 13.7
Main engines	2 Diesels; 480 bhp = 8 knots loaded speed
Capacity	280 000 gallons
Complement	27

Built in the United States in 1943. Recently used by Government as a commercial carrier. Renamed *Ulises Heureaux* in 1962. A photograph appears in the 1957-58 edition.

DISPOSAL
The oiler *San Carlos*, 8T 102, was officially deleted from the list in Feb 1965.

TUGS (Remolcadores)

HERCULES II R 2 GUACANAGARIX R 5

Dimensions, feet	70 x 18.5 x 9
Main engines	1 motor; 500 hp; 1 225 rpm
Complement	11

Small tugs of new construction.

ISABELA R 1

Displacement, tons	40
Dimensions, feet	65 x 14 x 9
Main engines	2 diesel motors; 300 bhp = 8 knots
Complement	8

Built in the United States. Named *Isabela* in 1957. A photograph appears in the 1951-52 to 1957-58 editions. The tug *Hercules* (ex-*Heracles*), Pennant No. R 2, transferred from the Dominican mercantile marine in 1952, was lost in 1956.

MERCEDES R 10 SANTANA R 7

Small tugs for harbour and coastal use.

DISPOSALS
The tugs *Bergantin*, R-6, *Catalina*, R-3, *Leonidas*, R-8 and *Luperon*, R-4 were discarded in 1960-62.

ECUADOR

Administration

Minister of Defence:
Señor Don Agustín Febres Cordero R.

Commander-in-Chief of the Navy:
Rear Admiral Gonzalo Calderon Noriega

Chief of Naval Staff:
Captain Edmundo Mena S.

Diplomatic Representation

Naval Attaché in Washington
Captain Mario R. Paz y Miño

Ships

The names of Ecuadorian naval vessels are prefaced by "BAE"

Personnel

1967: 4,000 officers and men

Establishments

Naval Academy: in Salinas

Naval Bases

In Galápagos Guayaquil, Salinas, and San Lorenzo

Strength of the Fleet

- 2 Escort Destroyers ("Hunt" Type)
- 1 Patrol Frigate (PF Type)
- 2 Escort Patrol Vessels (PCE Type)
- 2 Motor Gunboats (PGM Type)
- 6 Patrol Boats (Motor Launches)
- 2 Landing Craft (LSM Type)
- 1 Supply Ship (Cargo)
- 1 Survey Ship (ex-Netlayer)
- 1 Water Carrier (YW Type)
- 3 Tugs (1 Ocean, 2 Harbour)

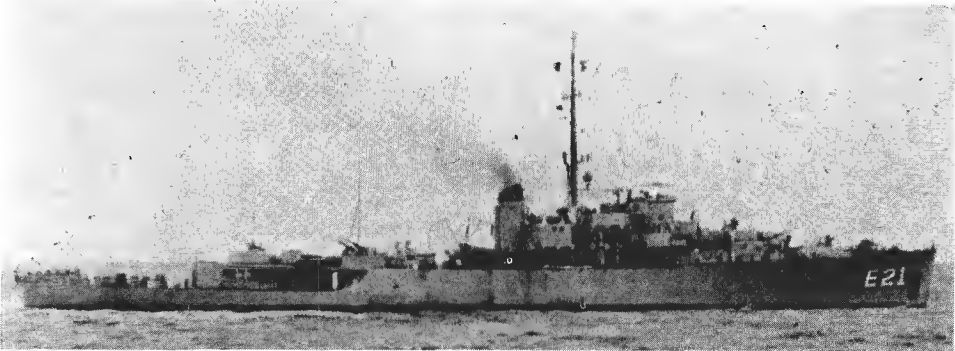
FRIGATES

Name	Pennant No.	Builders	Laid down	Launched	Completed
GUAYAS (ex-USS Covington, PF 56)	E 21 (ex-E 01)	Globe S.B. Co, Superior, Wis.	1 Mar 1943	15 July 1943	7 Aug 1944

1 Ex-U.S. PF Type

Displacement, tons	1 430 standard; 2 415 full load
Length, feet (metres)	304 (92.6) oa
Beam, feet (metres)	37.5 (11.4)
Draught, feet (metres)	13.7 (4.2)
Guns, surface	2-3 in (76 mm)
Guns, AA	2-40 mm; 4-20 mm
A/S	3 DCT
Boilers	2 small tube
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	20 designed; 18 sea
Radius, miles	7 000 at 18 knots
	9 500 at 12 knots
Oil fuel (tons)	290 normal; 645 max
Complement	150

Former United States patrol frigate of the PF type. Purchased from the USA in 1947. Similar in design to British "River" class frigates.



GUAYAS 1967, Ecuadorian Navy, Official

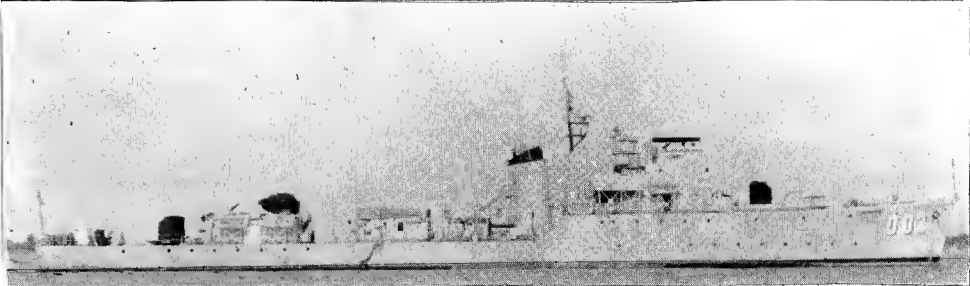
ESCORT DESTROYERS

Name	Pennant No.	Builders	Laid down	Launched	Completed
PRESIDENTE ALFARO (ex-HMS Quantock)	D 01	Scotts' S.B. & Eng Co Ltd, Greenock	26 July 1939	22 Apr 1940	6 Feb 1941
PRESIDENTE VELASCO IBARRA (ex-HMS Meynell)	D 02	Swan Hunter & Wigham Richardson, Wallsend	10 Aug 1939	7 June 1940	30 Dec 1940

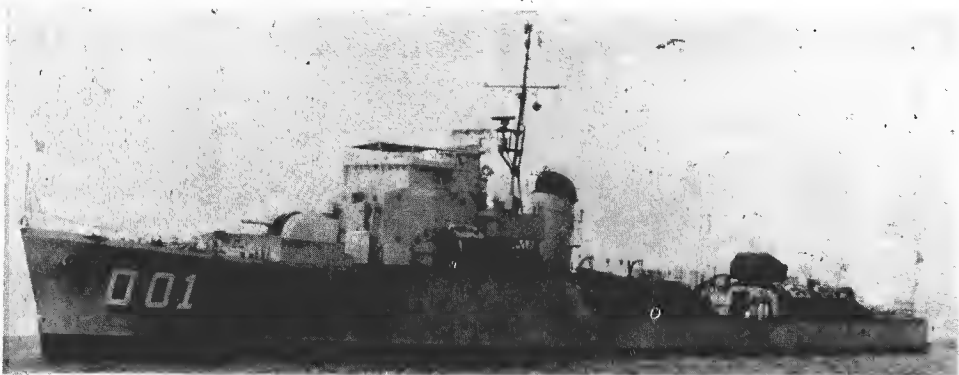
2 Ex-British "Hunt" Class (Type 1)
Escort Destroyers

Displacement, tons	1 000 standard; 1 490 full load
Length, feet (metres)	272.3 (83.0) pp; 280 (85.4) oa
Beam, feet (metres)	29 (8.8)
Draught, feet (metres)	14 (4.3)
Guns, surface	4-4 in (102 mm)
Guns, AA	2-20 mm
Guns, saluting	4-2 pdr.
A/S weapons	DC throwers; DC racks
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines (by Wallsend Slipway in Presidente Velasco Ibarra)
	19 000 shp; 2 shafts
Speed, knots	25 max
Radius, miles	2 000 at 12 knots
	800 at 25 knots
Oil fuel (tons)	280
Complement	146

Former British frigates (ex-escort destroyers) of the "Hunt" class, Type 1, purchased by Ecuador from Great Britain in 1955, and refitted by J. Samuel White & Co, Ltd, Cowes, Isle of Wight. Quantock was taken over by the Ecuadorian Navy from the Royal Navy in Portsmouth Dockyard on 16 Aug 1955, when she was renamed Presidente Alfaro. Sister ship Meynell was transferred to the Ecuadorian Navy later and renamed Presidente Velasco Ibarra.



PRESIDENTE VELASCO IBARRA 1965, Ecuadorian Navy, Official



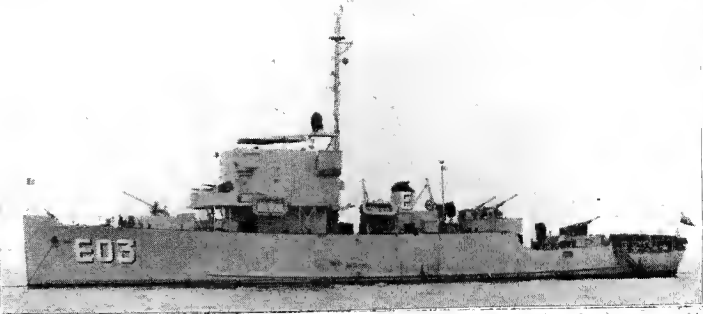
PRESIDENTE ALFARO 1967, Ecuadorian Navy, Official

ESCORT PATROL VESSELS

2 Ex-U.S. PCE Type

Name	ESMERALDAS	MANABI
	(ex-USS <i>Eunice</i> , PCE 846)	(ex-USS <i>Pascagoula</i> , PCE 874)
Pennant No.	E 22 (ex-E 03)	E 23 (ex-E 02)
Builders	Pullman Standard Car Manufacturing Co, Chicago, Ill	Albina Eng & Mach Works, Portland, Oreg
Laid down	10 Aug 1943	1 Mar 1943
Launched	20 Dec 1943	11 May 1943
Completed	4 Mar 1944	31 Dec 1943
Transferred	29 Nov 1960	5 Dec 1960
Displacement, tons	640 standard; 903 full load	
Dimensions, feet	180 wl; 184.5 oa x 33 x 9.5	
Guns	1—3 in dual purpose; 6—40 mm AA	
A/S weapons	4 DCT	
Main engines	GM diesels; 2 shafts; 1 800 bhp = 15.4 knots	
Complement	100 officers and men	

Former United States patrol vessels (180 ft Escorts) transferred from the US Navy to the Ecuadorian Navy in 1960.
A photograph of *Manabi*, appears in the 1963-64 and 1964-65 editions.



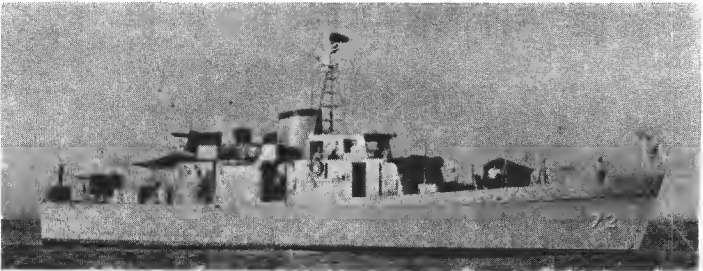
ESMERALDAS 1965, Ecuadorian Navy, Official

GUNBOATS

2 Ex-U.S. PGM Type

GUAYAQUIL	QUITO
(ex-US PGM 76) LC 73	(ex-US PGM 75) LC 71
Displacement, tons	101
Dimensions, feet	95 oa x 19 x 5
Guns	1—40 mm AA
Main engines	4 diesels; 2 shafts; 2 200 bhp = 21 knots
Radius, miles	1 500 at cruising speed
Complement	15

US built. Transferred to the Ecuadorian Navy under MAP on 30 Nov 1965.



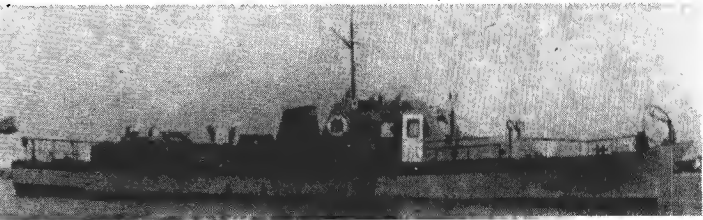
GUAYAQUIL 1967, Ecuadorian Navy, Official

PATROL BOATS

6 ML Type

LSP 1	LSP 2	LSP 3	LSP 4	LSP 5	LSP 6
Displacement, tons	45 standard; 64 full load				
Dimensions, feet	76.8 x 13.5 x 4.2 mean (6.3 max)				
Guns	Light MG AA				
Main engines	Bohn & Kahler diesel; 2 shafts; 1 200 bhp = 22 knots				
Range, miles	550 at 16 knots				
Complement	9				

Built by Hermenn Havighorst, Bremen-Blumenthal. Ordered in 1954. First two were delivered in Aug 1954 and the remainder in 1955. Pennant Nos. LP 81 to LP 86. A photograph of LP 1 appears in the 1955-56 edition.



LP 6 1963, Ecuadorian Navy Official

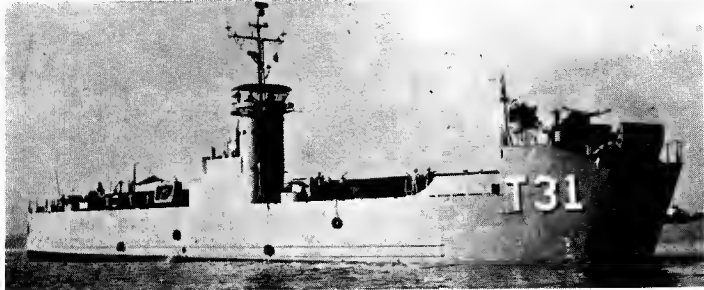
Although not on the Navy List of Ecuador the hulls of the former US Navy high speed transports (modified destroyer escorts) *Reeves* APD 52, *Frament*, APD 77, *Crosley* APD 87, *Hunter Marshall*, APD 112, and *Walter S. Gorka*, APD 114, were transferred from the United States in July and Aug 1961 for use as floating power plants. The auxiliary floating dock ARD 17, now renamed *Amazonas*, was also transferred on 7 Jan 1961, and dry dock companion craft YFND 20 was leased on 2 Nov 1961.

LANDING CRAFT

2 Ex-U.S. LSM Type

JAMBELI	TARQUI
(ex-USS LSM 539) T 31	(ex-USS LSM 555) T 32
Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa x 34.5 x 8.3
Guns	2—40 mm AA
Main engines	Diesels; 2 shafts; 2 800 bhp = 12.5 knots

Former US Landing Ships, Medium. *Jambeli* was laid down by Brown S.B. Co, Houston, on 10 May 1945. *Tarqui* was laid down by the Navy Yard, Charleston, SC on 3 Mar 1945 and launched on 22 Mar 1945. Purchased from USA in 1958 and transferred to the Ecuadorian Navy at Green Cove Springs, Florida, Crew 60. A photograph of *Tarqui* appears in the 1963-64 to 1966-67 editions.



JAMBELI 1967, Ecuadorian Navy, Official

SUPPLY SHIP

CALICUCHIMA (ex-US FS 525) T 42

Displacement, tons	650 light; 950 full load
Dimensions, feet	176 x 32 x 14 max
Main engines	Diesels; 2 shafts; 500 bhp = 11 knots

Former United States small cargo ship of the Army FS type. Leased to Ecuador on 8 Apr 1963. Provides service to the Galapagos Islands.

WATER CARRIER

ATHAUALPA (ex-US YW 131) T 41 (ex-A 01)

Displacement, tons	415 light; 1 235 full load
Dimensions, feet	174 x 33 max
Main engines	GM diesel; 750 rpm = 11.5 knots

Built by Leatham D. Smith SB Co, Sturgeon Bay in 1945. Transferred under MAP in Mar 1963. Acquired by the Ecuadorian Navy on 2 May 1963.

SURVEY SHIP

ORION (ex-USS *Mulberry*, AN 27) 101

Displacement, tons	560 standard; 805 full load
Dimensions, feet	146 wl; 163 oa x 30.5 x 11.8 max
Guns	1—3 in AA
Main engines	Diesel-electric; 800 bhp = 13 knots

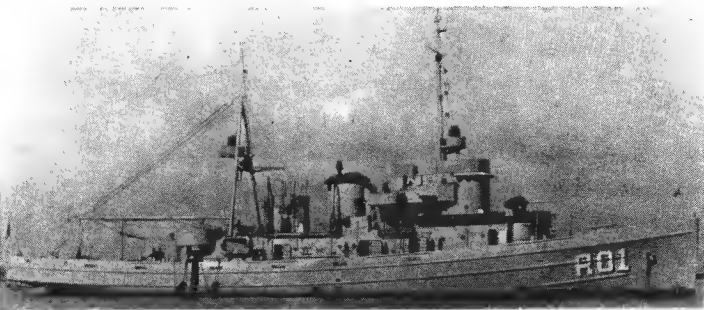
Built by Commercial Iron Works, Portland, Oregon. Launched on 26 Mar 1941. Loaned by US under MAP. Transferred to Ecuador in Nov 1965. Crew 48.

TUGS

CAYAMBE (ex-*Los Rios*, ex-USS *Cusabo*, ATF 155) R 51 (ex-R 01)

Displacement, tons	1 235 standard; 1 675 full load
Dimensions, feet	195 wl; 205 oa x 38.5 x 15.5 max
Guns	1—3 in; 4—40 mm AA; 2—20 mm AA
Main engines	4 diesels with electric drive; 3 000 bhp = 16.5 knots

Former US "Apache" class fleet ocean tug. Launched on 26 Feb 1945. Fitted with powerful pumps and other salvage equipment. Transferred to Ecuador by lease on 2 Nov 1960 and renamed *Los Rios*. Again renamed *Cayambe* in 1966. Crew 85.



CAYAMBE 1966, Ecuadorian Navy, Official

COTOPAXI (ex-R. T. *Ellis*) R 52

Displacement, tons	150
Dimensions, feet	82 x 21 x 8
Main engines	Diesel; 1 shaft; 650 bhp = 9 knots

Former American tug. Built by Equitable Building Co, Incorp. Purchased from the United States in 1947. Photograph in the 1956-57 to 1959-60 editions.

SANGAY (ex-*Loja*) R 53

Displacement, tons	295 light; 390 full load
Dimensions, feet	107 x 26 x 14
Main engines	Fairbanks Morse diesel; speed = 12 knots

Built in 1952. Acquired by the Ecuadorian Navy in 1964. Renamed in 1966.

EGYPT

Strength of the Fleet

13 Submarines	26 Patrol Boats
12 Destroyers, Escorts	44 Torpedo Boats
10 Minesweepers	24 Amphibious, etc

Personnel

1967: 12 000 officers and men,
including coast guards

Mercantile Marine

Lloyd's Register of Shipping :
120 vessels of 237 182 tons gross

5 Ex-U.S.S.R. "R" Type

Two "R" class units replaced two "W" class which returned to the USSR in May 1966. Another "R" class boat was transferred to Egypt in Feb 1966, and five "R" class had been delivered by the end of 1966. A total of eight "R" boats to be transferred by 1969. See particulars in USSR section.

7 Ex-U.S.S.R. "W" Type

Displacement, tons	1 030 surface; 1 180 submerged
Length, feet (metres)	240 (73.2) oa
Beam, feet (metres)	22 (6.7)
Draught, feet (metres)	15 (4.6)
Guns, AA	4—25 mm
Torpedo tubes	6—21 in (533 mm); 4 forward, 2 aft
Main engines	4 000 bhp diesels; 2 500 hp electric motors
Speed, knots	17 on surface; 15 submerged
Radius, miles	13 000
Complement	60

1 Ex-U.S.S.R. "MV" Type

Displacement, tons	350 surface; 420 submerged
Length, feet (metres)	167.3 (51.0)
Beam, feet (metres)	16 (4.9)
Draught, feet (metres)	12 (3.7)



"W" Type

Sergei Romanov

The first "W" class units were transferred from the Soviet Navy to the Egyptian Navy in June 1957. Three more arrived at Alexandria on 24 Jan 1958. Another was transferred to Egypt at Alexandria in Jan 1962.

Guns, AA	1—45 mm; 1 MG	Radius, miles	4 000 at 8 knots
Torpedo tubes	2—21 in (533 mm)	Complement	24
Main engines	1 000 bhp diesels; 800 hp electric motors	Launched in 1950. Transferred from the USSR to Egypt in June 1957. There is no evidence of new construction in Egypt.	
Speed, knots	13 on surface; 10 submerged		

DESTROYERS

4 + 2 Ex-U.S.S.R. "Skoryi" Type

AL NASSER AL AFFER	DAMIETTE SUEZ
Displacement, tons	2 600 standard; 3 500 full load
Length, feet (metres)	393.7 (120.0)pp; 420 (128.0) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	13.1 (4.0)
Guns, surface	4—5.1 in (130 mm)
Guns, AA	2—3 in (76 mm); 7—37 mm
A/S	4 DCT
Torpedo tubes	10—21 in (533 mm) quintupled
Mines	80
Boilers	3
Main engines	Geared turbines 70 000 shp; 2 shafts
Speed, knots	38
Radius, miles	4 000 at 15 knots
Complement	250

Former "Skoryi" class destroyers in the Soviet Navy. Launched in 1951. *Al Nasser* and *Al Zaffer* were delivered to the Egyptian Navy on 11 June 1956 at Alexandria.



SKORYI Type

Added 1966

The implication of each name in Arabic is "victory". It was reported in Dec 1959 that six destroyers had been or were being transferred from the USSR to Egypt. Two were delivered at Alexandria in Jan 1962. It is reported that the USSR will supply the Egyptian Navy with destroyers armed with 150 miles range sea-surface missiles, presumably of the "Krupny" or "Kildin" class.

2 Ex-British "Z" Type

EL FATEH (ex-Zenith) EL QAHER (ex-Myngs)

Name	El Fateh	El Qaher
Builders	Wm. Denny & Bros Ltd, Dumbarton	Vickers-Armstrongs Ltd, Tyne
Laid down	19 May 1942	27 May 1942
Launched	5 June 1944	31 May 1943
Completed	22 Dec 1944	23 June 1944

Displacement, tons	1 730 standard; 2 575 full load
Length, feet (metres)	350 (106.8) wl; 362.8 (110.6) oa
Beam, feet (metres)	35.7 (10.9)
Draught, feet (metres)	17 (5.2) props
Guns, dual purpose	4—4.5 in (115 mm)
Guns, AA	6—40 mm
A/S	4 DCT
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines 40 000 shp
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	2 800 at 20 knots
Oil fuel (tons)	580
Complement	250

Former "Z" class destroyers in the British Navy. Purchased from Great Britain in 1955. Before being taken over by Egypt *El Qaher* was refitted by J. Samuel White & Co Ltd, Cowes, Isle of Wight, and *El Fateh* refitted by John I Thornycroft & Co Ltd, Woolston, Southampton in July 1956.

MODERNISATION. Both ships were refitted and modernised by J. Samuel White & Co Ltd, at Cowes, Isle of Wight from May 1963 until July 1964.



EL QAHER

1965, courtesy J. Samuel White & Co. Ltd Cowes



EL FATEH

1966

ESCORTS

1 Ex-British "Black Swan" Type

Displacement, tons	1 490 standard; 1 925 full load
Length, feet (metres)	283 (86.3) pp; 299.5 (91.3) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	11.5 (3.5) mean
Guns, surface	6—4 in (102 mm)
Guns, AA	4—40 mm; 2—20 mm
A/S	4 DCT
Boilers	2 three-drum type
Main engines	Geared turbines
	4 300 shp, 2 shafts
Speed, knots	19.75 designed; 18 sea speed
Radius, miles	4 500 at 12 knots
Oil fuel (tons)	370
Complement	180

Former "Black Swan" class sloops (later re-rated as frigates) in the British Navy. Transferred from Great Britain in Nov 1949. As a flotilla leader she had a broad band painted on the funnel and a thinner flotilla band.

Name	No.
TARIK (ex-El Malek Farouq, ex-Whimbrel)	42

Builders	Laid down	Launched	Completed
Yarrow & Co Ltd, Glasgow	31 Oct 1941	25 Aug 1942	13 Jan 1943



TARIK

Added 1966

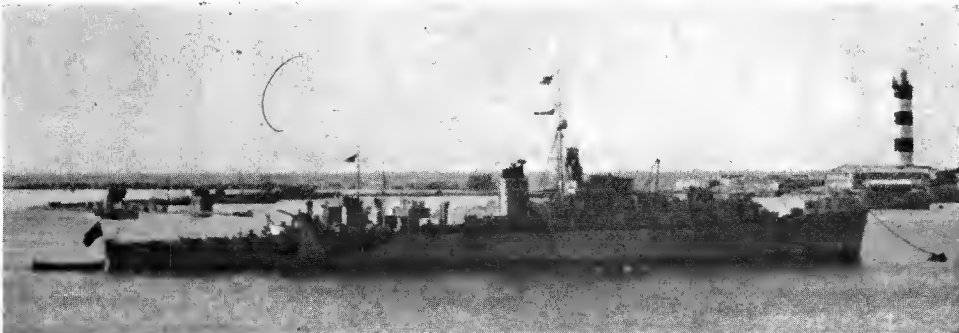
1 Ex-British "River" Type

Displacement, tons	1 490 standard; 2 216 full load
Length, feet (metres)	283 (86.3) pp; 301.5 (91.9) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	14 (4.3)
Guns, surface	1—4 in (102 mm)
Guns, AA	2—40 mm; 6—20 mm
A/S	4 DCT
Boilers	2 Admiralty 3-drum type
Main engines	Triple expansion
	5 500 ihp, 2 shafts
Speed, knots	18
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	640
Complement	180

Former "River" class frigates in the British Navy. Purchased from Great Britain in Nov 1948. Refitted by Willoughby (Plymouth) Ltd. Sailed for Egypt in Apr 1950. Formerly mounted two four-inch guns.

CLASS. Of her two sister ships *Abikir* (ex-HMS *Usk*) was sunk as a blockship in the Suez Canal in Nov 1956. (raised and dumped in Apr 1957); and *Domiat* (ex-HMS *Nith*) was sunk by the British cruiser *Newfoundland* off Suez on 1 Nov 1956.

Name	No.	Builders	Laid down	Launched	Completed
RASHEED (ex-Spey)	43	Smith's Dock Co Ltd, Middlesbrough	18 July 1941	10 Dec 1941	19 May 1942



RASHEED

Added 1966

1 Ex-British "Hunt" Type

Displacement, tons	1 000 standard; 1 490 full load
Length, feet (metres)	273 (83.2) wl; 280 (85.3) oa
Beam, feet (metres)	29 (8.8)
Draught, feet (metres)	14 (4.3) props
Guns, surface	4—4 in (102 mm)
Guns, AA	2—40 mm; 2—20 mm
A/S	2 DCT
Boilers	2 three-drum type
Main engines	Parsons geared turbines
	19 000 shp; 2 shafts
Speed, knots	25 max
Radius, miles	2 000 at 12 knots
Oil fuel (tons)	280
Complement	146

Former British "Hunt" Class, Type 1 escort destroyer (later re-rated as frigate). Served in the British Navy from 1940. Transferred from the British Navy to the Egyptian Navy in July 1950: Sailed for Egypt in April 1951, after a nine months' refit by J. Samuel White & Co Ltd, Cowes. She was first renamed *Ibrahim el Awal* but was renamed *Mohamed Ali el Kebir* about 1951.

Name	No.	Builders	Laid down	Launched	Completed
MOHAMED ALI (ex-Ibrahim el Awal, ex-Cottesmore)	11	Yarrow & Co, Ltd, Scotstoun, Glasgow	12 Dec 1939	5 Sep 1940	29 Dec 1940



MOHAMED ALI

Added 1966

CLASS. Sister ship *Ibrahim el Awal* served in the British Navy as HMS *Mendip* until 1948, when she was transferred to the Chinese Navy and renamed *Lin Fu*; she was returned to the British Navy at Hong Kong a year later and reverted to her original name, but was transferred to the Egyptian Navy in Nov 1949, when she was first renamed *Mohamed Ali el Kebir* but was afterwards again renamed *Ibrahim el Awal*, exchanging names with her sister ship about 1951-52. *Ibrahim el Awal* surrendered to Israeli forces off Haifa on 31 Oct 1956; she was rehabilitated and incorporated into the Israeli Navy and renamed *Haifa* (see later page).

1 Ex-British "Flower" Type

Displacement, tons	1 060 standard; 1 340 full load
Length, feet (metres)	190 (57.9) pp; 205 (62.5) oa
Beam, feet (metres)	33 (10.0)
Draught, feet (metres)	14.5 (4.4) max
Guns, surface	1—4 in (102 mm)
Guns, AA	2—20 mm
Boilers	2 SE
Main engines	Triple expansion; 2 750 shp
Speed, knots	16
Radius, miles	7 000 at 10 knots
Oil fuel (tons)	230
Complement	85

Former "Flower" class corvettes (later re-rated as frigates) in the British Navy. Taken over by Yugoslavia in 1943 (loaned). Returned to the British Navy early in 1949 and transferred to Egypt on 28 Oct 1949.

CLASS. Sister ship *Misir* (ex-SS *Malrouk*) was rammed and sunk by collision south of Suez 16th-17th May 1953.

None of the above four old WW2-built vessels are any longer of considerable military value.

Name	Builders	Laid down	Launched	Completed
EL SUDAN (ex-Mallow, ex-Partizanka ex-Nada, ex-Mallow)	Harland & Wolff, Ltd, Belfast	14 Nov 1939	22 May 1940	2 July 1940



EL SUDAN

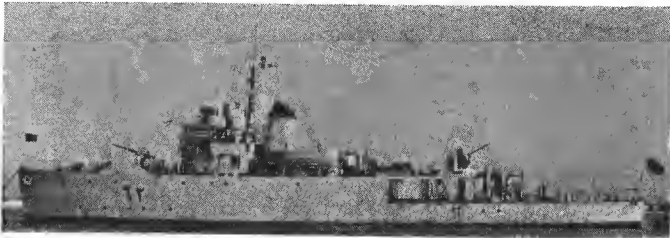
A. & J. Pavia

CORVETTES (ex-Fleet Minesweepers)

2 Ex-British "Bangor" Type

	Builders	Laid down	Launched	Completed
MATROUH (ex-Stornoway)	Henry Robb, Ltd, Leith	17 July 1940	10 June 1941	17 Nov 1941
NASR (ex-Bude)	Lobnitz & Co, Ltd, Renfrew	2 Apr 1940	4 Sep 1940	12 Dec 1941
Displacement, tons	672 standard; 900 full load			
Dimensions, feet	180 oa x 28.5 x 9.5			
Guns	1—4 in; 1—3 in; 2—40 mm AA; (4—20 mm in <i>Matrouh</i>)			
A/S weapons	2 DCT			
Main engines	Triple expansion; 2 shafts; 2 400 ihp = 16 knots (designed) sea speed 14 knots			
Boilers	2 Admiralty 3-drum type			
Oil fuel (tons)	170			
Radius, miles	4 300 at 10 knots			
Complement	60			

Former "Bangor" class fleet minesweepers acquired from Great Britain. Now rated as corvettes.
Sister ship Sollum sank in heavy weather off Alexandria on 7 Mar 1953.



MATROUH Egyptian Navy, Official

FLEET MINESWEEPERS

6 Ex-U.S.S.R. "T 43" Type

BAHAIRA	CHARKIEH	GARBIA	MINIYA
Displacement, tons	410 standard; 530 full load		
Dimensions, feet	200 x 27.2 x 9		
Guns	4—37 mm AA		
Main engines	Diesel = 18 knots		

Four reported to have been transferred from the Soviet Navy and delivered to Egypt in 1956, and two others later. *Hittine* and *Yarmouk* were allocated to Syria.

INSHORE MINESWEEPERS

2 Ex-U.S.S.R. "T 301" Type

Displacement, tons	130 standard; 180 full load
Dimensions, feet	100 x 16 x 4.5
Guns	2—37 mm AA; 2—25 mm AA
Main engines	Diesels; 2 shafts; 480 bhp = 10 knots
Complement	30

Reported to have been transferred by the USSR to Egypt in 1962.

DISPOSALS. Of the wooden coastal minesweepers, *Gaza* (ex-BYMS 2013) was lost on 26 July 1950, as a result of fuel-tank explosion off Mersa Matrouh, sister ships *Darfour* (ex-BYMS 2041) and *Tor* (ex-BYMS 2175) were transferred to the Algerian Navy on 6 Nov 1962, and the remaining six, *Arish* (ex-BYMS 2028), *Kaisaria* (ex-BYMS 2075), *Kordofan* (ex-BYMS 2212), *Malek Fuad* (ex-BYMS 2035), *Naharia* (ex-BYMS 2069) and *Rafah* (ex-BYMS 2149) are no more than mouldering hulks.

SUBMARINE CHASERS

8 Ex-U.S.S.R. "S.O.I." Type

Displacement, tons	215 light; 220 full load
Dimensions, feet	138 pp; 147 oa x 20 x 10 max
Guns	4—25 mm (2 twin mountings)
A/S weapons	4 five-barrelled ahead throwing rocket launchers
Main engines	3 diesels; 3 500 bhp = 28 knots

Reported to have been transferred by the USSR to Egypt in 1962 to 1967.

ROCKET ASSAULT SHIPS

Ex-U.S.S.R. "Polnocny Type

Displacement, tons	900 to 1 000
Dimensions, feet	246 x 39.3 x 9.8
Armament	Rocket projector
Main engines	Diesels, 4 000 bhp = 15 knots

A new type of Soviet Amphibious vessels basically similar to the United States medium rocket landing ships of the LSMR type. This TRV type, which can carry eight to ten tanks, was delivered from the USSR to the Egyptian Navy in 1965-66.

MISSILE PATROL BOATS

10 Ex-U.S.S.R. "Osa" Type

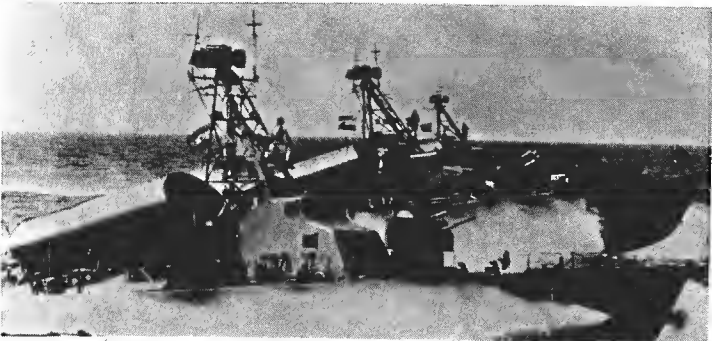
Displacement, tons	160 standard; 200 full load
Dimensions, feet	121.3 pp; 131.5 oa x 23 x 6.5
Guided weapons	4 large hood type missile launchers in two pairs abreast with range of 15 to 18 miles
Guns	4—25 mm (2 twin, 1 forward, 1 aft)
Main engines	3 diesels; 4 800 bhp = 35 knots

Reported to have been delivered from the Soviet Navy in 1966.

8 Ex-U.S.S.R. "Komar" Type

Displacement, tons	75 standard; 100 full load
Dimensions, feet	88 oa x 21 x 6
Guided Missiles	2 launchers with missiles of 10 to 15 miles range
Main engines	Speed = 40 knots

Former Soviet missile patrol boats reported transferred from the USSR in 1962 to 1967. A patrol boat named *Nisr 2*, 110 tons, is reported to have been launched at Port Said on 16 May 1963 by the Castro Naval Shipyard.



KOMAR Type 1966, Col. Bjorn Borg

MOTOR TORPEDO BOATS

2 Ex-U.S.S.R. "Shershen Type

Displacement, tons	150
Dimensions, feet	131.5 x 23 x 6.5
Guns	4—25 mm AA (2 twin)
Torpedo tubes	4—21 in (single)
Main engines	Gas turbines; speed = 40 knots

Reported to have been delivered from the USSR in Feb-1967.

36 Ex-U.S.S.R. "P 6" Type

Displacement, tons	50
Dimensions, feet	85.5 x 20 x 6
Guns	4—25 mm AA MG
Tubes	2—21 in
Main engines	Speed = 42 knots

The first twelve boats were reported to have arrived at Alexandria on 19 Apr 1956. Two E-boats were destroyed by British naval aircraft on 4 Nov 1956. The above particulars refer to the early arrivals. Six former Soviet motor torpedo boats of the "P6" class are reported to have been transferred by the USSR in 1960. See particulars in the USSR section.

6 Ex-Yugoslavian Type

Displacement, tons	56 full load
Dimensions, feet	78 x 20.7 x 5.2
Guns	1—40 mm AA
Tubes	4
Main engines	3 Packard motors; 3 shafts; 4 500 bhp = 35 knots

Purchased from Yugoslavia in 1956. Similar to United States Higgins boats.

DISPOSALS

The two motor torpedo boats of the British Fairmile "D" type, *El Naser* and *El Zafer*, are reported to have been disposed of, and the three motor launches of the British Fairmile "B" type, *Hamza* (ex-ML 134), *Sab el Bahr* and *Saker el Bahar* are now little more than worn out hulks.

The transport *El Ouseir* (ex-*El Amira Fawzia*) and the yachts *Ntisar* (ex-*Fakhr el Bihar*) and *El Horria* (ex-Royal Yacht *Mahroussa*), latterly used as training ship, were deleted from the list in 1967.

LANDING CRAFT

Ex-U.S.S.R. "MP" Type

Several utility landing craft of the MP-SM81, LCU type were delivered to the Egyptian Navy in 1965.

No. 1	No. 4	No. 7	No. 10	No. 13	No. 17
No. 2	No. 5	No. 8	No. 11	No. 14	No. 18
No. 3	No. 6	No. 9	No. 12	No. 16	No. 19

Displacement, tons	22 light; 35 loaded
Main engines	Speed = 11 knots

Of LCM type. (The tank landing ship *Aka* (ex-LST 178) was sunk as a block-ship near Lake Timsah in the Suez Canal on 1 Nov 1956).

FLEET TUGS

Ex-U.S.S.R. "Okhtensky" Type

A number of former Soviet fleet tugs are reported to have been transferred to the Egyptian Navy in 1966.

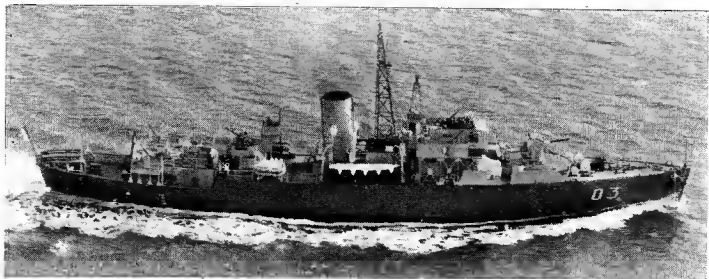
EIRE

CORVETTES

	Pennant No.	Laid down	Launched	Completed
CLIONA (ex-HMS Bellwort)	02	17 Sep 40	11 Aug 41	26 Nov 41
MACHA (ex-HMS Borage)	03	21 Nov 40	6 Nov 41	29 Apr 42
MAEV (ex-HMS Oxlip)	01	9 Dec 40	28 Aug 41	28 Dec 41

Displacement, tons	1 020 standard; 1 280 full load
Dimensions, feet	190 pp; 205 oa x 33 x 14.5
Guns	Maev: 1—4 'n; 1—2 pdr; 2—20 mm AA. Others: 1—4 in
A/S weapons	Hedgehog; 2 DC racks
Main engines	Triple expansion; 2 750 ihp = 16 knots (designed); best sea speed now 10 to 14-knots
Boilers	2 SE
Oil fuel (tons)	230
Complement	78

Formerly British "Flower" class corvettes. Purchased from Great Britain in 1946. The lattice mast was stepped in 1953. Cliona and Macha were built by George Brown & Co (Marine) Ltd, Greenock and Maev by A. & J. Inglis Ltd, Pointhouse, Glasgow. Cliona and Macha were refitted in 1966-67 and their secondary guns suppressed.



MACHA 1963, Irish Navy, Official

TENDERS

JOHN ADAMS

Measurement, tons	94 gross
Dimensions, feet	85 x 18.5 x 7
Main engines	Diesel; 125 bhp = 8 knots

Built by Richard Dunston, Ltd, Thorne, Doncaster, Yorks. Launched in 1934.

GENERAL McHARDY

Measurement, tons	100 gross
Dimensions, feet	76.5 x 18 x 9.5
Main engines	Compound reciprocating; 200 ihp = 9 knots

Built by Philip & Son, Ltd, Dartmouth, Devon, launched in 1928. Ferry tender.

WYNDHAM

Measurement, tons	93 gross
Dimensions, feet	85 x 16.5 x 8
Main engines	Compound reciprocating; 200 ihp = 9 knots

Built by Cox, Falmouth. Launched in 1903. Ferry tender and general utility craft.

EL SALVADOR
PATROL BOATS

GC 1 (ex-Fle-Ja-Lis)

GC 2 (ex-Nohaba)

Displacement, tons	46
Dimensions, feet	72 oa x 16 x 5.5
Guns	1—20 mm
Main engines	2 diesels; 2 shafts; speed = 12 knots
Complement	16

Former British HDML type. Purchased from commercial sources in 1959.

ETHIOPIA

Administration

The Imperial Ethiopian Navy, founded in 1955, is one of the three Services under the Ministry of National Defence. The Commander-in-Chief is His Imperial Majesty. The Deputy Commander-in-chief has his Naval Headquarters in Addis Ababa.

Deputy Commander-in-Chief of the Imperial Ethiopian Navy:

Commander H.I.H. Prince Alexander Desta.

Assistant Minister: Colonel Mebratu Fisseha.

Naval Advisers:

Captain W. C. Simpson, OBE, DSC, RN

Commandant J. P. Billard

Haile Selassie I Naval Base Commander:

Commander H. Stern

Naval Establishments

"Haile Selassie I", Massawa: Naval College, established in 1956.

Dongollo: Naval School and Training Centre

Embatcalla: Marine Commando Training School

Assab: Naval Base, expanding to include a ship repair facility.

Personnel

1967: 210 National officers and cadets. 980 National enlisted men.

ETHIOPIA—continued

TRAINING SHIP

ETHIOPIA (ex-USS Orca, AVP 49) A 01

Displacement, tons	1 766 standard; 2 800 full load
Dimensions, feet	300 wl; 310.8 oa x 41 x 13.5 max
Guns	1—5 in 38 cal; 5—40 mm AA (but guns vary)
Main engines	2 sets diesels; 2 shafts; 6 080 bhp = 18.2 knots
Complement	215

Former United States seaplane tender. Built by Lake Washington Shipyard, Houghton, Wash. Laid down 13 July 1942, launched on 4 Oct 1942 and completed on 23 Jan 1944. Transferred from the US Navy at the end of 1961.



ETHIOPIA 1967, Imperial Ethiopian Navy, Official

MOTOR TORPEDO BOATS

BARRACUDA P 22

SHARK P 21

Displacement, tons	60
Dimensions, feet	69 pp; 78 oa x 21.3 x 7
Guns	1—40 mm AA; 2—12.7 mm MG
Tubes	2
Main engines	3 Packard petrol motors; speed 40 knots
Complement	17

Former Yugoslavian motor torpedo boats built late in 1951. Received by Ethiopia in Jan 1960, and given fish names.



SHARK (Barracuda behind) 1963, Imperial Ethiopian Navy, Official

PATROL BOATS

PC 11 (ex-USCG WVP 95304)

PC 12 (ex-USCG WVP 95310)

PC 13 (ex-USN PGM 53)

PC 15 (ex-USN PGM 54)

PC 14 (ex-USN PGM 58)

Displacement, tons	101
Dimensions, feet	95 oa x 19 x 5
Guns	1—40 mm AA; 1—50 cal MG
Main engines	4 diesels; 2 shafts; 2 200 bhp = 21 knots
Radius, miles	1 500 at cruising speed
Complement	15

Ex-WVP 95304 and WVP 95310 are former US Coast Guard cutters transferred in 1958. Ex-PGM 53 and Ex-PGM 54 are motor gunboats of the same type built by Petersen Builders for transfer in July and Aug 1961. Ex-PGM 58 was transferred under MAP in June 1962. All are steel-hulled and twin-screwed. Photograph of PC 14 in 1962-63 to 1966-67 editions.

There are also four new construction boats, length 40 feet, guns 2—50 cal (one forward, one aft), speed 25 knots, crew 1 officer, 3 men. First two are named Caroline and John, G8 21.



PC 11 1967, Imperial Ethiopian Navy, Official

LANDING CRAFT

There are 2 of the US LCM type and 2 of the US LCVP type, all acquired in 1963.

FINLAND

Administration

Commander-in-Chief, Finnish Navy:
Rear-Admiral J. Pirhonen

Diplomatic Representation

Naval Attaché in London:
Captain O. Vitikka, FN

Naval Attaché in Washington:
Colonel O. W. Tuomisoalo

Strength of Fleet

- 3 Frigates (1 for Training)
- 2 Coastal Minelayers
- 13 Fast Patrol Boats
- 4 Coast Guard Patrol Vessels
- 13 Motor Patrol Boats
- 5 Inshore Minesweepers
- 22 Support Ships and Service Craft

New Construction Programme

- 2 Fast CODOG Frigates of 2,000 tons

Treaty Limitations

The Finnish Navy is limited by the treaty of Paris 1947 to 10,000 tons of ships and 4,500 personnel. Submarines and motor torpedo boats are prohibited.

Personnel

1967: 1,500 officers and ratings

Mercantile Marine

Lloyd's Register of Shipping:
422 vessels of 1,027,798 tons gross

FRIGATES (Saattajat)

2 "Uusimaa" Class

HÄMEENMAA	UUSIMAA
Displacement, tons	950 standard; 1 350 full load
Length, feet (metres)	278.8 (85.0) pp; 295.2 (90.0) oa
Beam, feet (metres)	32.2 (9.8)
Draught, feet (metres)	11 (3.4)
Guns, dual purpose	3—3.9 in (100 mm) single
Guns, AA	4—37 mm
A/S	1 Hedgehog; 4 DC projectors
Torpedo tubes	3—21 in (533 mm)
Mines	50 (capacity)
Boilers	2
Main engines	Geared turbines
	25 000 shp; 2 shafts
Speed, knots	28
Complement	150



HÄMEENMAA

1967, Finnish Navy, Official

Former Soviet frigates of the "Riga" class. Purchased from the Soviet Union, and transferred to the Finnish Navy on 28 Apr 1964 and 12 May 1964, respectively. A photograph of *Uusimaa* appears in the 1964-65 to 1966-67 editions.

TRAINING FRIGATE (Koululaiva)

1 Ex-British "Bay" Class

Name	Builders	Laid down	Launched	Completed
MATTI KURKI (ex-HMS Porlock Bay, ex-Loch Seaforth, ex-Loch Muick)	Charles Hill & Sons, Ltd, Bristol	22 Nov 1944	14 June 1945	8 Mar 1946

Displacement, tons	1 580 standard; 2 420 full load
Length, feet (metres)	286 (87.2) pp; 307.5 (93.7) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	15.2 (4.6)
Guns, surface	4—4 in (102 mm)
Guns, AA	6—40 mm
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	18
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	724
Complement	160



MATTI KURKI

1966, A. & J. Pavia

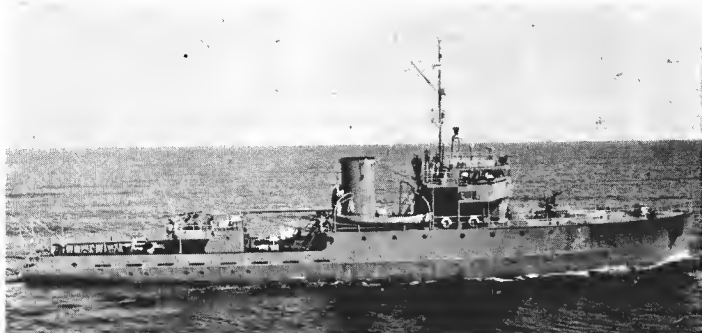
Former British frigate of the "Bay" class. Transferred from the Royal Navy to the Finnish Navy in March 1962. Employed as a training ship.

COASTAL MINELAYERS (Miinalaivat)



KEIHASSALMI

1967, Finnish Navy, Official



RUOTSINSALMI

Finnish Navy, Official

KEIHASSALMI

Displacement, tons	360
Dimensions, feet	168 x 23 x 6 (officially revised figures)
Guns	2—40 mm AA; 2—20 mm AA
Mines	100
Main engines	2 MAN diesels; 2 shafts; 1 600 bhp = 15 knots
Complement	60

RUOTSINSALMI

Displacement, tons	310
Dimensions, feet	150 x 23 x 5 (officially revised figure)
Guns	2—40 mm AA; 2—20 mm AA
Mines	100
Main engines	2 Rateau diesels; 2 shafts; 1 200 bhp = 15 knots
Complement	60

A coastal minelayer of improved "Ruotsinsalmi" type built at Valmet Oy Shipyard, Helsinki, under contract dated June 1955. Launched on 16 Mar 1957.

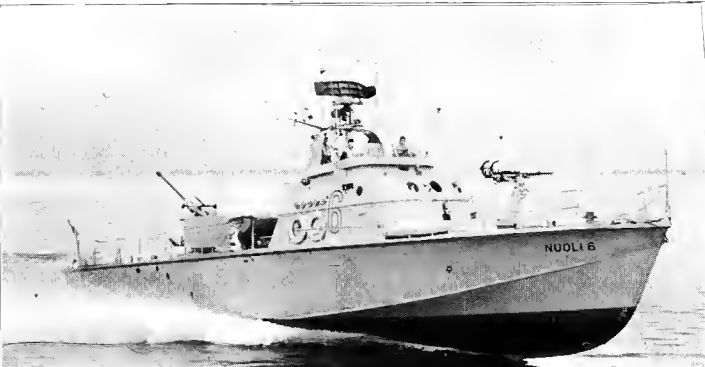
Built by Crichton-Vulcan Shipyard, Turku. Laid down in 1937. Launched in May 1940. Completed in Feb 1941.

FAST PATROL BOATS (Nopeat vartioveneet)

11 "Nouli" Class

NUOLI 1	NUOLI 3	NUOLI 5	NUOLI 7	NUOLI 9
NUOLI 2	NUOLI 4	NUOLI 6	NUOLI 8	NUOLI 10
				NUOLI 11
Displacement, tons 40 (officially revised figure)				
Dimensions, feet 72.2 x 21.7 x 5				
Guns 1—40 mm; 1—20 mm AA				
Main engines 3 diesels; 2 700 bhp = 40 knots				
Complement 15				

Designed and built by Laivateollisuus Oy, Turku. First four were launched in 1961, five more in 1962, and two more in 1963.



NUOLI 6 1965, Finnish Navy, Official



NUOLI 1 1962, Finnish Navy, Official

2 "Vasama" Class

VASAMA 1	VASAMA 2
Displacement, tons 70	
Dimensions, feet 67 pp; 71.5 oa x 19.5 x 6	
Guns 2—40 mm AA	
Main engines 2 Napier Deltic diesels; 5 000 bhp = 42 knots	
Complement 20 (officially revised figure)	

British "Dark" type built by Saunders Roe (Anglesey) Ltd, Beaumaris, England, in 1955-57. A photograph of *Vasama 2* appears in the 1963-64 to 1966-67 editions.

DISPOSALS
The former Italian fast patrol boats *Hurja 1*, *Hurja 2*, *Hurja 3*, *Hurja 4* and *Hurja 5* were scrapped in 1963

The old fast patrol boats JYMY 1, JYMY 2, JYMY 3, and JYMY 4, formerly MAS 526, MAS 527, MAS 528 and MAS 629, were officially stricken from the list in 1961. Of the fast patrol boats of the "Taisto" class, *Taisto 2*, *Taisto 4* and *Taisto 5* were scrapped in 1963, and *Taisto 3*, *Taisto 6*, *Taisto 7* and *Taisto 8* were removed from the effective list in 1966.



VASAMA 1 1967, Finnish Navy, Official

CORVETTES (Tykkiveneet)

2 New Construction

Displacement, tons	circa 600
Dimensions, feet	228.7 x 26.2
Guns	1—4.7 in automatic dp forward; 2—40 mm AA (single) aft
A/S weapons	Depth charge projectors
Main engines	CODAG (combined diesel and gas turbine). Bristol Siddeley Olympus gas turbine; 22 000 hp

Fast gunboats for trade protection ordered by the Finnish Navy on 23 Feb 1965 from Wärtsilä-yhtymä Oy Shipyard, Helsinki, Flush decked, raked bow, simple and clean superstructure. Rocket flare guide rails on sides of 4.7 in turret.



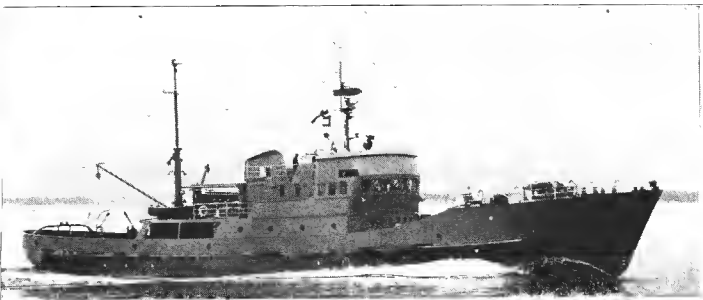
TYKKIVENE 1966, Finnish Navy, Official

COAST GUARD PATROL VESSELS (Vartiolaivat)

SILMA

Displacement, tons	490
Dimensions, feet	161 x 26 x 12
Main engines	1 800 bhp = 13 knots

Coast guard vessel built by Laivateollisuus Oy, Turku, in 1962-63.

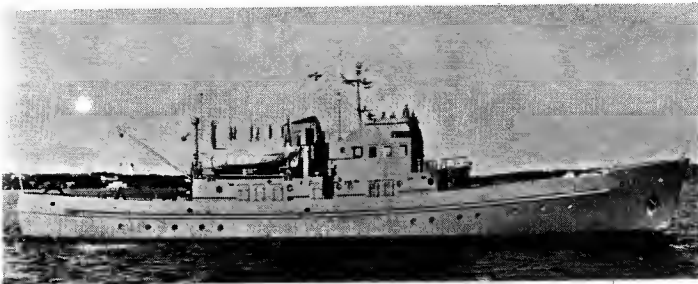


SILMA 1964, Finnish Navy, Official

UISKO

Displacement, tons	350
Dimensions, feet	130 x 22 x 13
Main engines	1 800 bhp = 14 knots

Coast guard patrol vessel built by Valmet Oy, Helsinki. Launched in 1958. Completed in 1959.



UISKO 1964, Finnish Navy, Official

TURSAS

Displacement, tons	360
Dimensions, feet	131.2 x 23.5 x 14
Guns	1—3 in; 1—40 mm AA; 2—20 mm AA
Main engines	Diesel; 620 bhp = 12 knots

Built by Crichton-Vulkan. Launched in 1933. Coast Guard vessel under the Ministry of the interior. A photograph of *Tursas* appears in the 1954-55 to 1963-64 editions.

AURA

Displacement, tons	350
Dimensions, feet	128 x 23 x 11.5
Guns	1—3 in, 2—20 mm AA
Main engines	Triple expansion; 700 ihp = 10 knots

Launched in 1907. This vessel belongs to the Coast Guard, which is under the Ministry of the interior.

DISPOSALS

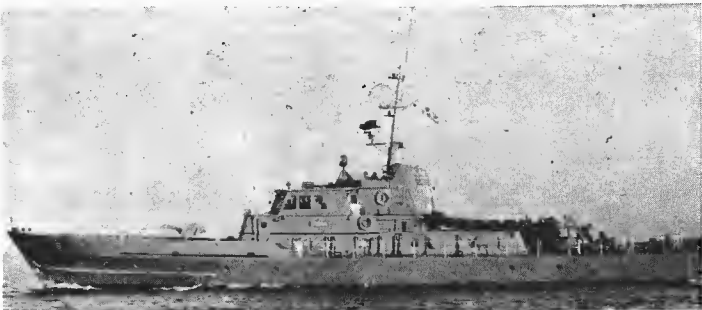
The coast guard vessel *Merikotka* was officially deleted from the list in 1960.

MOTOR PATROL BOATS (Vartiomoottoriveneet)

VIIMA

Displacement, tons 130
Dimensions, feet 117.2 x 21.7 x 7.5
Guns 1—20 mm AA
Main engines 3 engines; 4 050 bhp = 25 knots

Coast guard patrol boat built by Laivateollisuus Oy Ab, Turku, Finland in 1964.



VIIMA - 1967, Finnish Navy, Official

8 "Koskelo" Class

KAARKURI
KIILSA

KOSKELO
KUOVI

TELKKA
KUIKKA

KURKI
TAVI

Displacement, tons 75 standard; 97 full load
Dimensions, feet 96.5 x 16.5 x 3.5
Guns 2—20 mm AA
Main engines 2 Mercedes-Benz diesels; 2 shafts; 1 000 bhp = 16 knots
Complement 8

Built of steel and strengthened against ice, *Koskelo* and *Kuikka* were completed in 1956. Remaining six were completed in 1958-60.

A photograph of *Koskelo* appears in the 1957-58 to 1963-64 editions.



TAVI 1964, Finnish Navy, Official

VMV 19

VMV 20

Displacement, tons 35 (officially revised figure)
Dimensions 69 x 13.5 x 4
Guns 1—20 mm
Main engines Speed = 11 knots

Built in Finland. Launched in 1943. Ex-motor launches *SP 41*, *42*. *VM 18* (ex-*SP 1*) was stricken from the list in 1958. For other disposals see 1966-67 edition.

VMV 11

VMV 13

Displacement, tons 35 (officially revised figure)
Dimensions, feet 82 x 13.8 x 3.2
Guns 1—20 mm
Main engines Semi-diesel; 1 200 bhp = 25 knots
Complement 9

Built in Finland. Launched in 1935. All the above motor patrol boats (*Viima*, "*Koskelo*" class, and *VMSs*) belong to the Coast Guard which is under the Ministry of the Interior.

CABLE SHIP (Kaapelialus)

PUTSAARI

Displacement, tons 430
Dimensions, feet 138 x 27 x 7
Main engines Diesel; 450 bhp = 10 knots

Built by Rauma-Repola Oy Shipyard, Rauma. Launched in Dec 1965.



PUTSAARI 1967, Finnish Navy, Official

INSHORE MINESWEEPERS (Raivaajat)

5 "R" Class

RAISIO

RIHTNIEMI

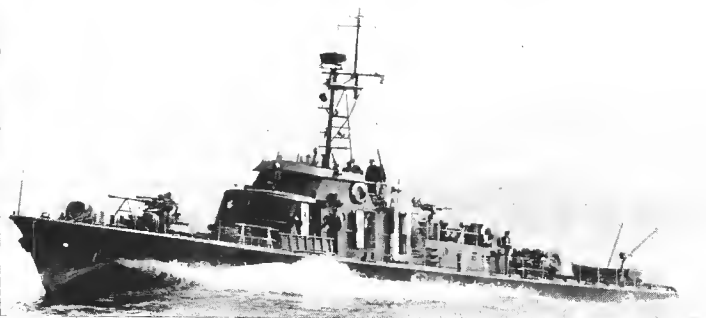
RÖYTÄ

RUISSALO

RYMÄTTYLÄ

Displacement, tons 110 standard; 130 full load
Dimensions, feet 108.7 x 18.3 x 6
Guns 1—40 mm Bofors; 1—20 mm Masden
Main engines 2 Mercedes-Benz diesels; 1 400 bhp = 15 knots

Rihtniemi and *Rymättylä* were ordered in July 1955 and launched in 1956. Built by Rauma-Repola Oy Shipyard, Rauma, Finland. Delivered on 20 May 1957. Variable pitch propellers. *Raisio*, *Röyttä* and *Ruissalo* were built by Laivateollisuus, Turku, in 1959. A photograph of *Rymättylä* appears in the 1960-61 to 1963-64 editions, and of *Röyttä* in the 1962-63 to 1966-67 editions.



RAISIO 1965, Finnish Navy, Official



RUISSALO 1967, Finnish Navy, Official

DISPOSALS (COASTAL MINESWEEPERS)

Of the four ex-US BYMS type coastal minesweepers, *Tammenpää* and *Vahterpää* were sold for scrap in 1958. *Purunpää* was discarded as unfit for further service in 1959, and *Katanpää* was scrapped in 1960.

DISPOSALS (MOTOR MINESWEEPING BOATS)

The motor minesweeping boat *Kallanpää* was scrapped in 1963, and her sister ship *Ajonpää* was scrapped in 1959.

Of the motor minesweeping boats of the "*Kuha*" class, *Kuha 2*, *Kuha 5*, *Kuha 7*, *Kuha 8*, *Kuha 12*, *Kuha 13*, *Kuha 14*, *Kuha 15*, *Kuha 16*, *Kuha 17* and *Kuha 18* were scrapped in 1963, *Kuha 10* and *Kuha 11* were scrapped in 1961, and *Kuha 1*, *Kuha 4* and *Kuha 9* were scrapped in 1959-60.

Of the motor minesweeping boats of the "*Ahven*" class, *Ahven 2*, *Ahven 3*, *Ahven 4* and *Ahven 6* were scrapped in 1963. *Ahven 1* and *Ahven 5* were scrapped in 1961.

ICEBREAKERS (Jäänmurtajat)

TARMO

Displacement, tons 4 890 (officially revised figure)
Dimensions, feet 281 x 71 x 21
Main engines Wärtsilä-Sulzer diesels; electric drive; 4 shafts; 12 000 bhp = 16.5 knots

Built by Wärtsilä-yhtymä Oy Shipyard, Helsinki. Completed in 1963.



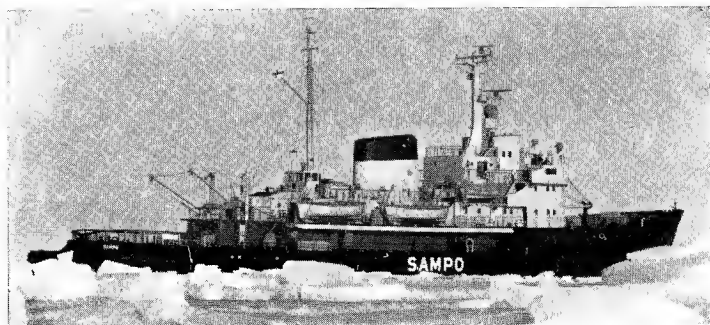
TARMO 1965, Finnish Navy, Official

Icebreakers—continued

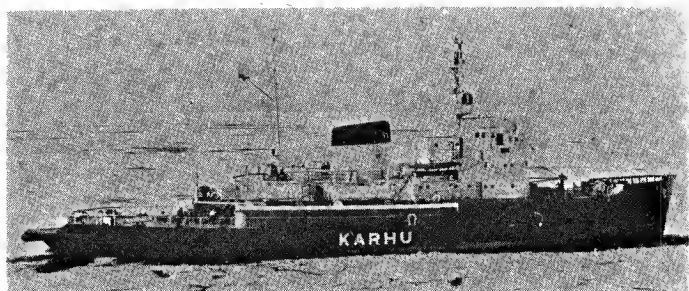
3 "Karhu" Class

KARHU	MURTAJA	SAMPO
Displacement, tons	3 370	
Dimensions, feet	243.2 × 57 × 20	
Main engines	Diesel-electric; 4 shafts; 7 500 bhp = 16 knots	

Built by Wärtsilä-yhtymä Oy Shipyard, Helsinki. *Karhu* was launched on 22 Oct 1957, and completed at the end of 1958. *Murtaja* was launched on 23 Sep 1958. *Sampo* was completed in 1960. A photograph of *Murtaja* appears in the 1962-63 edition.



SAMPO 1963, Finnish Navy, Official

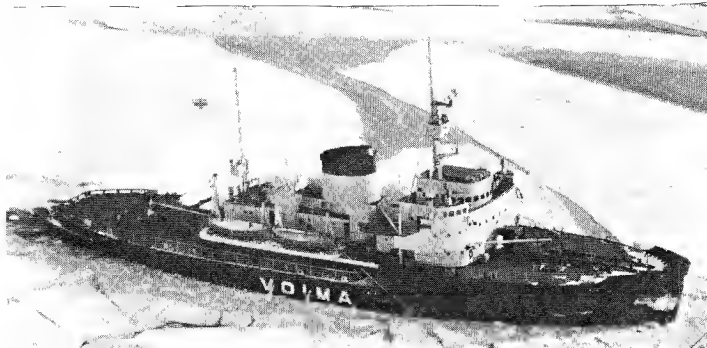


KARHU 1966, Finnish Navy, Official

VOIMA

Displacement, tons	4 200
Dimensions, feet	254.8 wl; 274 oa × 63.7; 61.3 wl × 20.3
Main engines	Diesels with electric drive; 4 shafts; 14 000 bhp = 16.5 knots
Oil fuel (tons)	740

Built by Wärtsilä-yhtymä Oy Shipyard, Helsinki. Launched and completed in 1953. Built for deep-sea work. Two propellers forward and aft. Transferred to the Board of Navigation in 1956.



VOIMA 1965, Finnish Navy, Official

SISU

Displacement, tons	2 000
Dimensions, feet	194.8 wl; 210.2 oa × 46.5 × 16.8
Guns	2—3.9 in AA
Main engines	3 sets Atlas Polar Diesels with electric drive; 2 shafts and a bow propeller; 4 000 hp = 16 knots
Complement	100

Built by Wärtsilä-yhtymä Oy Shipyard, Helsinki. Launched on 24 Sep 1938.



SISU 1964, Finnish Navy, Official

OTSO

Displacement, tons	900
Dimensions, feet	134.5 pp; 144.3 oa × 37.5 × 16.5
Main engines	Triple expansion, with bow propeller; 1 860 iph = 13 knots
Oil fuel, tons	60

Launched in 1936. Belongs to the town of Helsinki. Photograph in the 1953-54 and earlier editions.

APU (ex-Tarmo, ex-Sampo II)

Displacement, tons	2 400
Dimensions, feet	210.5 wl; 220 oa × 47 × 18.2
Main engines	Triple expansion; 2 shafts; 3 850 iph = 12 knots
Complement	43

Built by Armstrong & Co Ltd, Newcastle-on-Tyne. Launched in 1907. (Her name was changed when *Sampo* and *Tarmo* were allocated successively as names for new icebreakers). A photograph of this ship (as *Tarmo*) appears in the 1958-59 to 1963-64 editions.

ADMINISTRATION

All the above icebreakers belong to the Board of Navigation, except the *Otsa*, which belongs to the town of Helsinki.

DISPOSALS

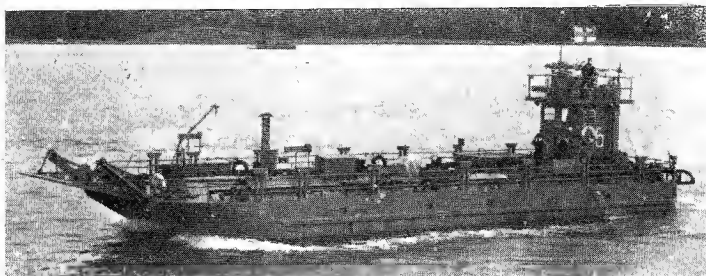
The old and less powerful icebreakers *Apu* and *Murtaja* were scrapped in Spring 1959 and 1958, respectively. The old icebreaker *Sampo* was scrapped in 1961.

TRANSPORT CRAFT (Kuljetusalukset)

6 "Kala" Class

KALA 1	KALA 2	KALA 3	KALA 4	KALA 5	KALA 6
Displacement, tons	60				
Dimensions, feet	81.8 × 26.2 × 6 (officially revised figures)				
Main engines	2 diesels; 370 bhp = 9 knots				

Launched in 1956. Completed in 1959. Of LCU (utility landing craft) type. Officially classed as transport craft. A photograph of *Kala* 2 appears in the 1959-60 to 1962-63 editions.



KALA 6 1963, Finnish Navy, Official

SEILI ex-F 177)

Displacement, tons	180
Dimensions, feet	143 × 20 × 4 (officially revised figures)
Guns	1—1.4 in (105 mm)
Main engines	Speed = 10 knots

Former German MFP type landing craft converted and armoured. Launched in 1942. *Lonna* was scrapped in 1963.

3 "Pansio" Class (Tug Type)

PANSIO (1947)	PORKKALA (1940)	PUKKIO (1929)
Displacement, tons	162	
Dimensions, feet	92 × 21.5 × 9	
Guns	1—40 mm; 1—20 mm AA	
Main engines	Diesel; 300 bhp = 10 knots	

Built by Valmet Oy, Turku. Launch dates above. Vessels of the tug type used as transports, minesweeping tenders, minelayers and patrol vessels. Can carry 20 mines. A photograph of *Porkkala* appears in the 1962-63 edition.

TRAINING SHIP

The training ship *Suomen Joutsen* (ex-*Oldenburg*, ex-*Laennec*) was converted into a stationary seaman's school ship, and sold to the Finnish Mercantile School in 1960.

TUGS (Hinaajat)

3 "Pirttisaari" Class

PIRTTISAARI (ex-DR 7)	PYHTÄÄ (ex-DR 2)	PURHA (ex-DR 10)
Displacement, tons	150 (officially revised figures)	
Dimensions, feet	69 × 20 × 8.5	
Guns	1—20 mm	
Main engines	Speed = 8 knots	

Former United States Army Tugs. Launched in 1943-44. General purpose vessels used as minesweepers, minelayers, patrol vessels, tenders, tugs or personnel transports. *DR 2* and *DR 7* were adapted as the Coast Artillery transports *Phytää* and *Pirttisaari* in 1958 and 1959, respectively. A photograph of *Phytää* (*DR 2*) appears in the 1953-54 to 1962-63 editions.

FRANCE

Administration

Chief of the Naval Staff:
Amiral G. E. J. Cabanier

Assistant Chief of Naval Staff:
Vice-Amiral de Bazelaire

Diplomatic Representation

Naval Attaché in London:
Contre-Amiral Marcel Andre Noël

Naval Attaché in Washington:
Contre-Amiral Perre Rebut

Strength of the Fleet

- 3 Aircraft Carriers (1 Training)
- 1 Helicopter Carrier (Training/Commando)
- 23 Submarines (Diesel Powered)
- 2 Cruisers (1 Fleet Command Ship)
- 2 Guided Missile Armed Frigates
- 4 Guided Missile Armed Destroyers
- 14 Destroyers (A/S, AD, and Command)
- 28 Frigates
- 15 Ocean Minesweepers
- 71 Coastal Minesweepers
- 14 Patrol Vessels
- 15 Inshore Minesweepers
- 9 Survey Ships (2 Former Frigates)
- 150 Support Ships and Service Craft

1965-70 New Construction Plan

- 3 Nuclear Powered Ballistic Missile Submarines
- 1 Nuclear Powered Fleet Submarine
- 2 Diesel Powered Patrol Submarines
- 5 Anti-Submarine "Heavy Corvettes" (Frigates)
- 8 Minehunters

Personnel

1967: 70,000 (5,000 officers, 65,000 petty officers and men)

Mercantile Marine

Lloyd's Register of Shipping:
1,539 vessels of 5,260,248 tons gross

FRENCH CARRIER-BORNE AIRCRAFT

Name	Maker	Type	Dimensions	Power Plant	Armament	Performance
ETENDARD IV-M	Dassault	Single-Seat Interceptor and Fighter-Bomber	Wing Span 31 ft 6 in Length 47 ft 3 in	One SNECMA Atar 8 turbojet	Two 30 mm can- non, 3 000 lb of bombs or missiles	Max speed 673 mph at 36 000 ft. Range 370- 1 000 miles
ETENDARD IV-P	Dassault	Single-Seat Reconnaissance/ Flight Refuelling Tanker Aircraft	Wing Span 31 ft 6 in	One SNECMA Atar 8 turbojet	Cameras in nose and underfuselage pack	Max speed 673 mph at 36 000 ft. Range 370- 1 000 miles
Br 1050 ALIZÉ	Breguet	Three-Seat Anti-Submarine Aircraft	Wing Span 51 ft 2 in Folded 22 ft 11 in Length 45 ft 6 in	One Rolls-Royce Dart R. Da. 7 turboprop	One ASM torpedo Up to five depth charges. Six rockets or two missiles	Max speed 322 mph. Normal endurance 4 hr 30 min.
SA 321G SUPER FRELON	Sud- Aviation	Anti-Submarine and Transport Helicopter	Rotor dia 62 ft. Length (blades and tail folded), 56 ft.	Three Turboméca Turmo III C3 shaft turbines	Anti-Submarine attack weapons	Max speed 165 mph. Range 584 miles

French carriers also equipped with US-built F-8E (FN) Crusader fighters and French-built Sikorsky SH-34 (HSS-1) helicopters.

FRENCH NAVAL GUIDED MISSILES

Type	Name	Maker	Length ft	Propulsion	Speed Mach.	Range miles	Guidance System	Notes
SURFACE-TO- SURFACE	Malafon	Latécoère	19.66	Two solid boosters only. Unpowered in cruise	0.6	11'	Command	Aeroplane configuration. Built around 21in. acoustic homing torpedo. In service.
SURFACE-TO- AIR	Masurca Mk 2	Ruelle Arsenal	28.2	Two-stage solid propellent	2.5	25	Semi- active radar	To be standard naval anti- aircraft armament
UNDER- WATER-TO- SURFACE	MSBS	S.E.R.E.B.		Two-stage solid propellent		1 250 to 1 600	Inertial	Sixteen to be carried by each SNLE submarine. Under development. Nuclear warhead

R Aircraft Carriers
S Submarines (*Sous-marins*)
C Cruisers and Command Ships
D Destroyers (*Escorteurs d'Escadre*
and Lance-Engins)
F Frigates (*Escorteurs and Avisos*)

R Flag Superior:

95 Arromanches
 97 Jeanne d'Arc
 98 Clemenceau
 99 Foch

S Flag Superior:

613 Roland Morillot
 631 Narval
 632 Marsouin
 633 Dauphin
 634 Reaun
 635 Aréthuse
 636 Argonaute
 637 Espadon
 638 Morse
 639 Amazone
 640 Ariane
 641 Daphné
 642 Diane
 643 Doris
 644 Eurydice
 645 Flore
 646 Galatée
 647 Minerve
 648 Junon
 649 Venus
 655 Gymnote

C Flag Superior:

610 de Grasse
 611 Colbert

D Flag Superior:

602 Suffren
 603 Duquesne
 621 Surcouf
 622 Kersaint
 623 Cassard
 624 Bouvet
 625 Depetit Thouars
 626 Chevalier Paul
 627 Maille Brézé
 628 Vauquelin
 629 D'Estrées
 630 Du Chayla
 631 Cassabianca
 632 Guépratte
 633 Duperré
 634 La Bourdonnais
 635 Forbin
 636 Tartu
 637 Jauréguiberry
 638 La Galissonnière

F Flag Superior:

724 Malgache
 725 Victor Schoelcher
 726 Commandant Bory
 727 Amiral Charner
 728 Doudart de Legré
 729 Balny
 733 Commandant Rivière
 748 Protet
 749 Ensigne de Vaisseau Henry
 761 Le Corse
 762 Le Brestois
 763 Le Boulonnais
 764 Le Bordelais
 765 Le Normand
 766 Le Picard
 767 Le Gascon
 768 Le Lorrain
 769 Le Bourguignon
 770 Le Champenois
 771 Le Savoyard
 772 Le Breton
 773 Le Basque
 774 L'Agenais
 775 Le Béarnais
 776 L'Alsacien
 777 Le Provençal
 778 Le Vendéen

M Minesweepers (*Dragueurs*)**M Flag Superior:**

609 Narvik
 610 Ouistreham
 612 Alençon
 613 Berneval
 614 Bir Hacheim
 615 Cantho
 616 Dompaigne
 617 Garigliano
 618 Mytho
 619 Vinh-long
 620 Berlaumont
 621 Origny
 622 Autun
 623 Baccarat
 624 Colmar
 631 Pavot
 632 Pervenche
 633 Pivoine
 634 Renoncule
 635 Réséda
 638 Acacia
 639 Acanthe
 640 Aconit
 667 Ajonc
 668 Azalée
 669 Begonia
 670 Bleuet
 671 Camélia
 672 Chrysanthème
 673 Coquelicot
 674 Cyclamen
 675 Egalintine
 676 Gardénia
 677 Giroflée
 678 Glaieul
 679 Glycine
 681 Laurier
 680 Jacinthe
 682 Lilas
 683 Liseron
 684 Lobelia
 685 Magnolia
 686 Marguerite
 687 Mimosa
 688 Muguet
 701 Sirius
 702 Rigel
 703 Antarès
 704 Algol
 705 Aldebaran
 706 Régulus
 707 Véga
 708 Castor
 709 Pollux
 710 Pégase
 726 La Dunderquoise
 727 La Malouine
 728 La Bayonnaise
 729 La Paimpolaise
 730 La Dieppoise
 731 La Lorientaise
 734 Croix du Sud
 735 Etoile Polaire
 736 Altair
 737 Capricorne
 740 Cassiopée
 741 Eridan
 742 Orion
 743 Sagittaire
 744 Achernar
 745 Procyon
 746 Arcturus
 747 Bételgeuse
 748 Persée
 749 Phénix
 750 Bellatrix
 751 Dénébola
 752 Centaure
 753 Fomalhaut
 754 Canopus
 755 Capella
 756 Céphée
 757 Verseau
 758 Aries
 759 Lyre
 765 Mercure
 771 Tulipe
 772 Armoise
 773 Violette
 774 Oeillet
 775 Paquerette
 776 Jasmin
 781 Aubépine
 782 Capucine
 783 Hortensia

P Patrol Vessels (*Patrouilleurs*)
L Landing Ships
A Auxiliaries (including Support Ships
 and Survey Ships)

M Flag Superior—continued

784 Geranium
 785 Hibiscus
 786 Dahlia
 787 Jonquille
 788 Myosotis
 889 Petunia

P Flag Superior:

630 L'Intrépide
 635 L'Ardent
 637 L'Etourdi
 638 L'Effronté
 639 Le Frondeur
 640 Le Fringant
 641 Le Fougueux
 642 L'Opiniâtre
 643 L'Agile
 644 L'Adroit
 645 L'Alerte
 646 L'Attentif
 647 L'Enjoué
 648 Le Hardi
 730 La Combattante

L Flag Superior:

9003 Argens
 9004 Bidassoa
 9005 Odet
 9006 Cheliff
 9007 Trieux
 9008 Dives
 9009 Blavet
 9020 Foudre
 9021 Ouragan
 9097 Issole

A Flag Superior

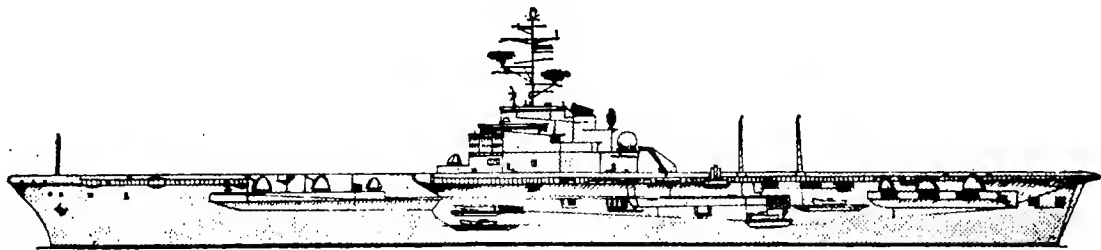
603 Henry Poincaré
 607 Somali
 610 Ile d'Oléron
 611 Maine
 612 Médoc
 613 Morvan
 615 Loire
 617 Garonne
 618 Rance
 619 Aber Wrac'h
 620 Acheron
 621 Rhin
 622 Rhone
 626 La Charente
 627 La Seine
 628 La Saone
 634 Verdon
 637 Maurienne
 641 Gustave Zédé
 644 Berry
 675 Isère
 682 Alidade
 683 Octant
 752 Beaufort Beaupré
 753 La Pérouse
 754 Paul Goffeny
 755 Commandant Robert Giraud
 758 La Recherche
 759 Marcel Le Bihan
 771 Tarn
 780 Astrolabe
 781 Boussole

Aircraft Carriers

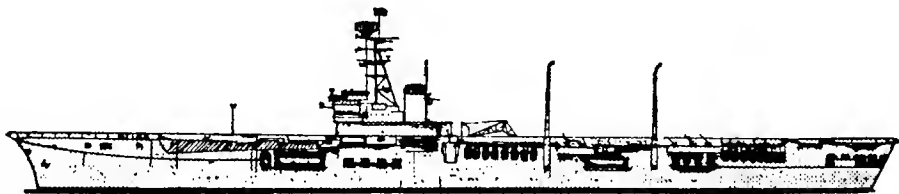
Silhouettes

Cruisers

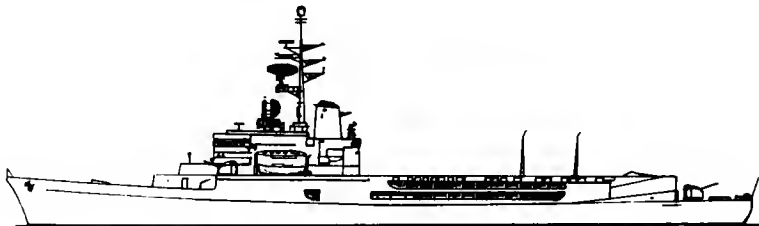
Scale: 150 feet = 1 inch



CLEMENCEAU, FOCH



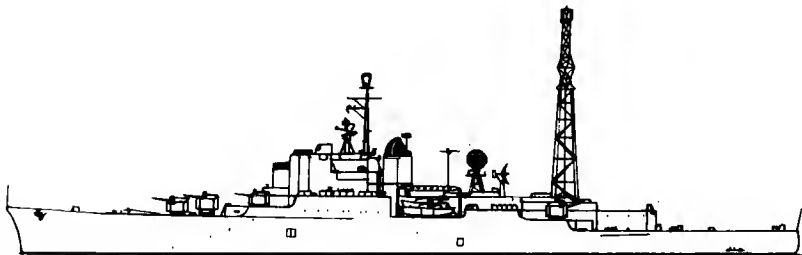
ARROMANCHES



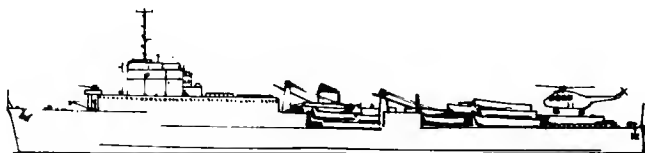
JEANNE D'ARC



COLBERT



DE GRASSE

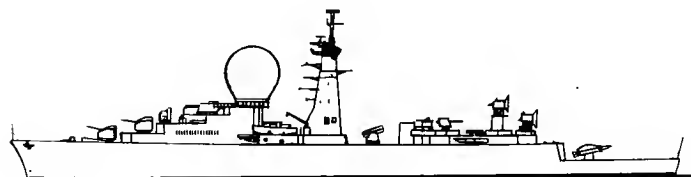


OURAGAN

Destroyers, Escorts

Silhouettes—continued

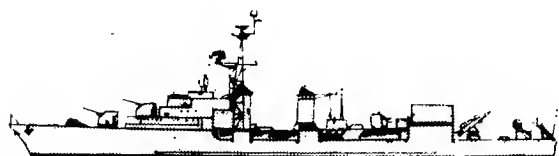
Frigates, etc.



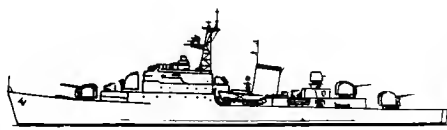
SUFFREN



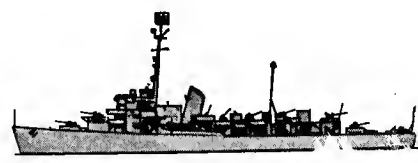
SURCOUF Class. Guided Missile Type



LA GALISSONNIERE



COMMANDANT RIVIÈRE Class



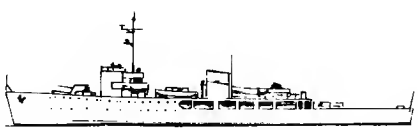
MALGACHE



DUPERRÉ Class. T. 53 R Type



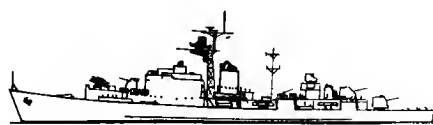
L'ALSACIEN, LE PROVENÇAL, LE VENDEEN



BEUTEMPS-BEAUPRÉ Class



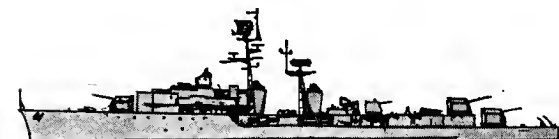
SURCOUF Class. Original T 47 Type



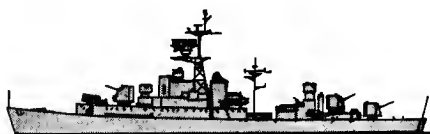
L'AGENAIS, LE BÉARNAIS, LE BRETON



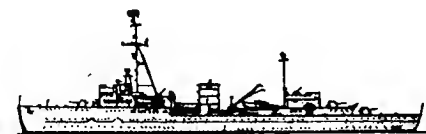
PAUL GOFFENY



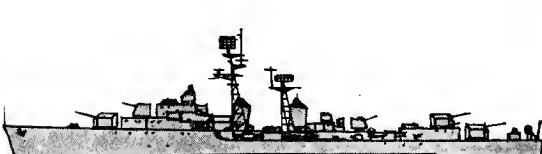
SURCOUF Class. Command Type



LE NORMAND Class E 52 Type



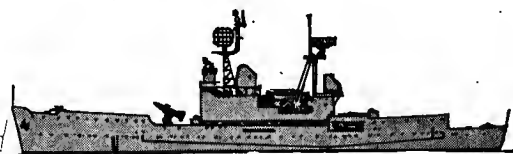
GUSTAVE ZÉDÉ



D'ESTRÉES (VDS aft)



LE CORSE Class, E 50 Type



ÎLE D'OLÉRON

AIRCRAFT CARRIERS (Porte-Avions)

2 "Clemenceau" Class

Displacement, tons	22 000 standard ; 32 800 full load (official revised figures)
Length, feet (metres)	780 8 (238 0) pp. 858 6 (261 7) oa
Beam, feet (metres)	96 2 (29 3) hull, <i>Clemenceau</i> 104 (31 7) hull with bulges <i>Foch</i> (see <i>Bulge</i> notes)
Width, feet (metres)	168 (51 2) oa
Draught, feet (metres)	25 3 (7 7) ; 28 (8 56) screws
Catapults	2 Mitchell-Brown steam, Mk BS 5
Aircraft	Capacity 30, including jet aircraft Each carries 3 Flights—1 of <i>Etendard IV</i> , 1 of <i>Aquilon</i> , 1 of <i>Breguet Alizé</i> . See <i>Aircraft</i> notes
Armour	Flight deck, island superstructure and bridges, hull (over machinery spaces and magazines)
Guns, AA	8—3 9 in (100 mm) automatic in single turrets
Boilers	6 ; steam pressure 640 psi (45 kg cm ²) ; superheat 842°F (450°C)
Main engines	2 sets Parsons geared turbines 126 000 shp ; 2 shafts
Speed, knots	31 max (33 4 trials) ; 24 sustained sea
Radius, miles	6 400 at 18 knots 3 500 at full power
Oil fuel (tons)	3 600
Complement	2 150 (official revised figures)

These are the first aircraft carriers designed as such and built from the keel up to be completed in France. Authorised in 1953 and 1955 respectively. *Clemenceau* was ordered from Brest Dockyard on 28 May 1954 and begun in Nov 1955. *Foch* began construction at Chantiers de l'Atlantique a St. Nazaire, Penhoet-Loire, in a special dry dock (the contract provided for the construction of the hull and propelling machinery) and was completed by Brest Dockyard.

AIRCRAFT. 50 Crusaders were purchased during 1965 for *Clemenceau* and *Foch*.

FLIGHT DECK. They have the angled deck incorporated, two lifts, measuring 52 5 x 36 feet, one of them on the starboard deck edge, two steam catapults for aircraft up to 11 tons, and two mirror sight deck landing aids. The flight deck measures 543 x 96 8 feet and is angled at 8 degrees.

HANGAR. Dimensions of the hangar are: 497 7 x 87 x 28 feet.

Name	No.	Builders	Laid down	Launched	Completed
CLEMENCEAU (PA 54)	R 98	Brest	Nov 1955	21 Dec 1957	22 Nov 1961
FOCH (PA 55)	R 99	Penhoët-Loire & Brest	Feb 1957	23 July 1960	15 July 1963



CLEMENCEAU

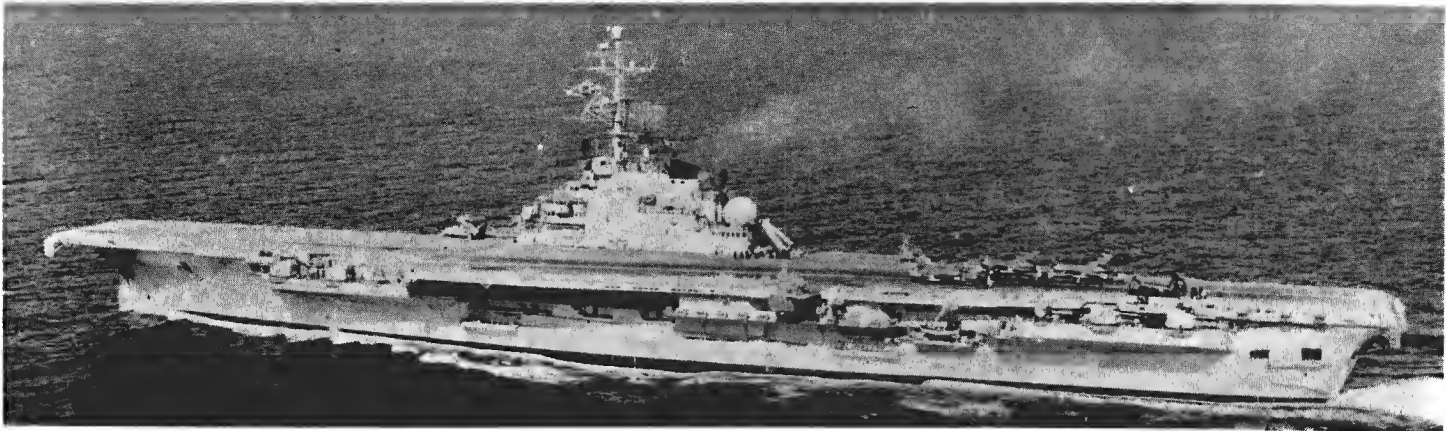
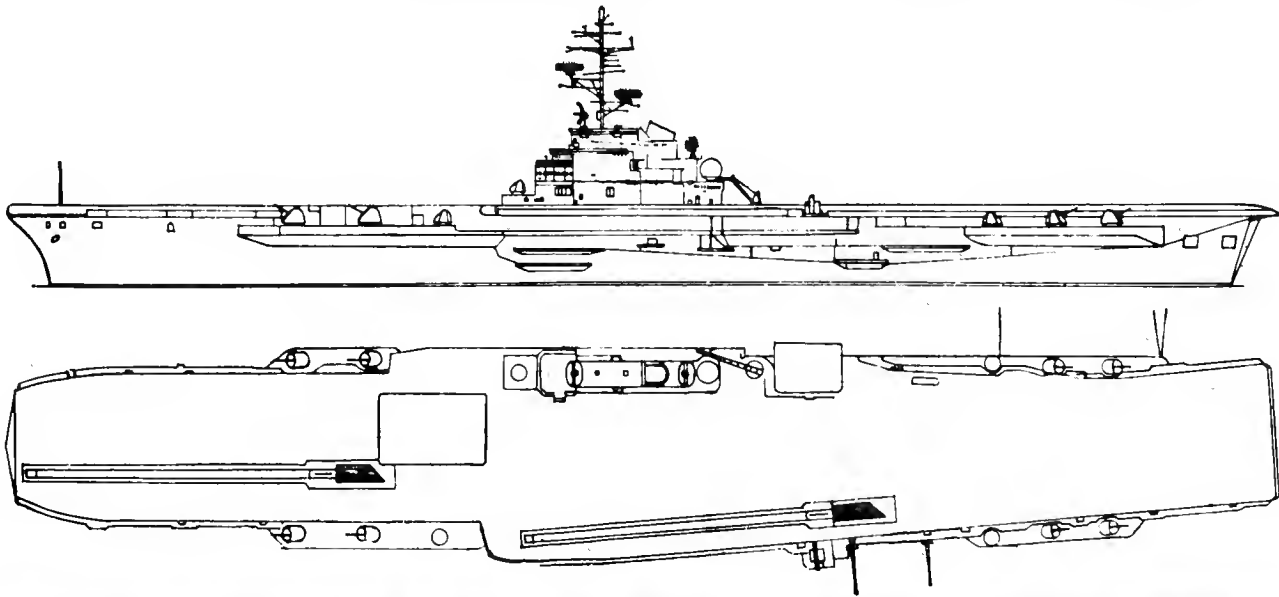
1966, French Navy, Official

GUNNERY. These aircraft carriers were originally to have been of the light fleet type with an armament of 24—2 25 inch guns in twin mountings, but the armament was revised to 12—3 9 inch (100 mm) in 1956 and to 8—3 9 inch (100 mm) in 1958. The 100 mm guns are of a new design. Rate of fire 60 rounds per minute.

BULGE. *Foch* was completed with bulges, and she therefore has greater width, see above official figures. These bulges having proved to be successful during trials, *Clemenceau* will be modified similarly when she undergoes her first refit.

PHOTOGRAPHS. A starboard broadside view, a port bow oblique aerial view, and an overhead plan view of *Clemenceau* showing angled deck, appear in the 1960-61 and 1961-62 editions; and a port oblique aerial view and a bows-on aerial view in the 1962-63 edition. A port quarter aerial view of *Foch* in the 1963-64 to 1965-66 editions and a port broadside surface view of *Clemenceau* in the 1964-65 and 1965-66 editions.

DRAWING. Port elevation and plan of *Clemenceau*. Scale: 128 feet = 1 inch. Redrawn in 1960.



FOCH

1966, French Navy, Official

Aircraft Carriers—continued

Name	Pennant No.	Builders	Laid down	Launched	Completed
ARROMANCHES (ex-HMS Colossus)	R 95	Vickers-Armstrongs Ltd, Newcastle-on-Tyne	1 June 1942	30 Sep 1943	16 Dec 1944

1 Ex-British "Colossus" Class

Displacement, tons	14 000 standard; 19 600 full load
Length, feet (metres)	694.5 (211.7) oa
Beam, feet (metres)	80.2 (24.5)
Width, feet (metres)	118 (36.0) oa
Draught, feet (metres)	23 (7.0)
Aircraft	24 (variable) including Helicopters
Boilers	4 three-drum type; 400 psi 28 kg/cm ² ; 680°F (360°C)
Main engines	Parsons geared turbines 40 000 shp; 2 shafts
Speed, knots	23.5
Radius, miles	12 000 at 14 knots
Oil fuel (tons)	3 200
Complement	1 019 (42 officers and 777 men, plus 200 for air service)

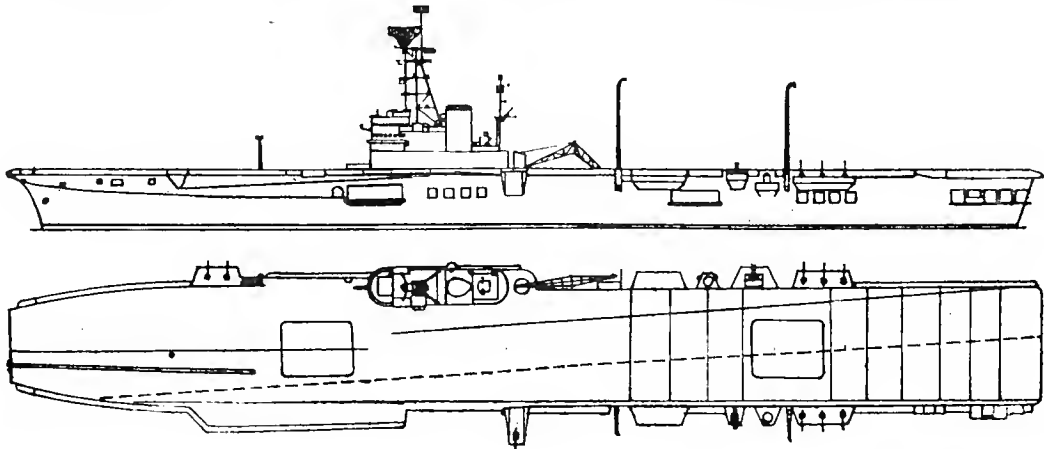
This ship was lent to the French Navy for five years from August 1946 with the option of purchase in 1951. This was taken up, and she was permanently transferred from Great Britain in that year. Extensively refitted 1950-51, and again refitted in 1957-58.

RECONSTRUCTION. Modernised and partially rebuilt in 1957-58 with the angled deck at 4 degrees, and mirror sight deck landing aid sponsons, the overall width being increased from 112.5 feet to just over 118 feet (36 metres). In consequence of these modifications the ship was able to receive Breguet Alizé ASM aircraft of the 1050 type.

ENGINEERING. Engines and boilers are arranged en echelon, one set of turbines and two boilers being installed side by side in each of the two main propelling machinery spaces, on the unit system, so that the starboard propeller shaft is longer than the port.

GUNNERY. She formerly mounted 43—40 mm AA guns (as refitted) but these were removed when she became a training and helicopter carrier.

DRAWING. Port elevation and plan. Drawn in 1959. Scale: 128 feet = 1 inch.



ARROMANCHES

1965, French Navy, Official



ARROMANCHES

1965, French Navy, Official



ARROMANCHES

1959, French Navy Official

HELICOPTER CARRIER (Croiseur Porte-Hélicoptères)

Name	No.	Builders	Ordered	Laid down	Launched	Completed
JEANNE D'ARC (ex-La Résolue)	R 97	Brest Dockyard	8 Mar 1957	7 July 1960	30 Sep 1961	1 July 1963 (trials) 30 June 1964 (service)

1 Training/Commando Type

Displacement, tons	10 000 standard ; 12 300 full load
Length, feet (metres)	597.1 (182.0) oa
Beam, feet (metres)	78.7 (24.0) hull
Draught, feet (metres)	21.6 (6.6) max
Helicopter platform	230 × 85 ft. (70 × 26 m)
Aircraft	Heavy A/S helicopters (4 in peace-time as a training ship 8 in wartime)
Missiles, AA	Twin launcher for "Masurca"
Guns, AA	4—3.9 in (100 mm), single mountings
Boilers	4; working pressure 640 psi (45 kg/cm ²); 842°F (450°C)
Main engines	Rateau-Bretagne geared turbines 40 000 shp; 2 shafts
Speed, knots	26.5 designed
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	1 360
Complement	920 (40 officers, 200 petty officers 490 men and 190 cadets)

Authorised under the 1957 estimates. Used for training officer cadets in peacetime in place of the old training cruiser *Jeanne d'Arc* (which was decommissioned on 28 July 1964 and sold for scrap in Dec 1965 at Brest). In wartime, after rapid modification, she would be used as a commando ship, helicopter carrier or troop transport with commando equipment and a battalion of 700 men. The lift has a capacity of 12 tons. The ship is almost entirely air-conditioned.

GUNNERY. She was originally designed to mount six 100 mm (3.9 inch) guns (now four), and a quadruple mortar, now replaced by a twin launcher for "Masurca" surface-to-air guided missiles.

ELECTRONICS. The ship is almost as well equipped with electronic apparatus as the aircraft carrier *Clemenceau*. She also has long range sonar gear.

NOMENCLATURE. The name *La Résolue* was only a temporary one until the decommissioning of the training cruiser *Jeanne d'Arc* which was relieved by *La Résolue* in 1964 when the latter ship took the name *Jeanne d'Arc*, on 16 July.

MODIFICATIONS. Between first steaming trials and completion for operational service the ship was modified with a taller funnel to clear the superstructure and obviate the smoke and exhaust gases swirling on to the bridges. After completion, in 1964, the whaleboat emplacement was plated in.

PHOTOGRAPHS of *Jeanne d'Arc* (as *La Résolue*), before modification with taller funnel, appear in the 1963-64 edition: near broadside surface view, starboard quarter surface view, and port quarter oblique aerial view showing hangar open. The latter view also appears in the 1964-65 edition. A port bow view and a starboard quarter view, both before the whaleboat emplacement was plated in, appear in the 1964-65 and 1965-66 editions.

DISPOSAL OF ESCORT CARRIER
The auxiliary aircraft carrier *Dixmude* (ex-HMS *Biter*, ex-*Rio Parana*), officially rated as *Transport d'Aviation*, former US escort carrier, reduced to a hulk in 1960 and used as a barracks, was returned to the USA in 1965 and sunk as a target. (For disposals of Fast Light Fleet Aircraft Carriers, Battleships, Cruisers and Light Cruisers, see 1964-65 edition).



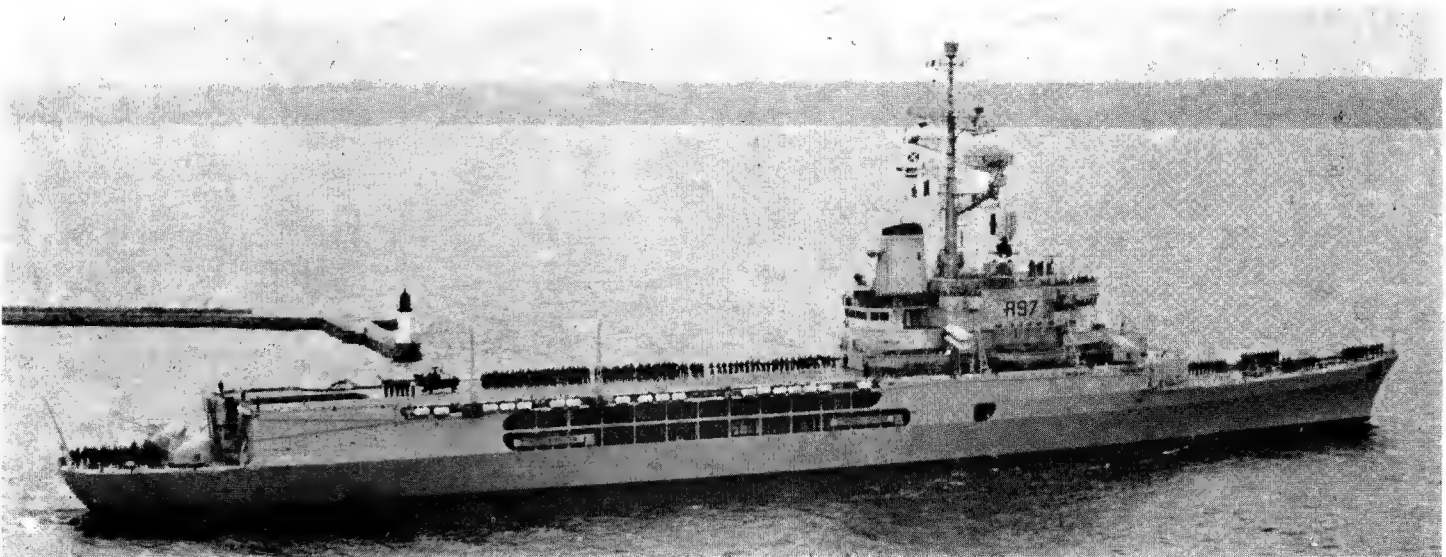
JEANNE D'ARC

1965, French Navy, Official



JEANNE D'ARC

1966 courtesy Admiral M. Adam



JEANNE D'ARC (whaleboat emplacement plated in)

1966, French Navy, Official

SUBMARINES

1 Nuclear Powered Fleet Type (SSN)

RUBIS (Q 255)

Displacement, tons 3 800
Length, feet (metres) 275 6 (84 0)
Beam, feet (metres) 34 8 (10 6)

Draught, feet (metres) 25 (7 6)
Torpedo tubes 6, internal
Nuclear reactors 1
Main engines Geared turbines
Complement About 100

A nuclear powered fleet submarine of a new hunter killer type and high performance of which no further particulars have been officially released. Projected under the second five-year plan, and is expected to commence assembly on the slip in 1968.

Nuclear Powered Ballistic Missile Type (SSBN)

Name	No	Builders	Laid down	Launched	Completion	Operational
LE REDOUTABLE	SNLE 1 (Q 252)	Cherbourg Naval Dockyard	30 Mar 1964	29 Mar 1967	Estimated 1969	Estimated 1970
LE TERRIBLE	SNLE 2 (Q 256)	Cherbourg Naval Dockyard	24 June 1967	Estimated 1969	Estimated 1971	Estimated 1972

Displacement, tons 7 900 surface; 9 000 submerged
Length, feet (metres) 420 (128 0)
Beam, feet (metres) 34 8 (10 6)
Draught, feet (metres) 32 8 (10 0)
Missiles, surface 16 tubes amidships for "Polaris" type ICBM's; range 1 900 miles
Torpedo tubes 4—21 7 in (550 mm) A/S bow
Nuclear reactors 1 pressurised water-cooled
Main engines 2 turbo-alternators; 1 electric motor; 15 000 hp; 1 shaft
Auxiliary propulsion 1 diesel
Speed, knots 20 on surface; 25 submerged (conservative estimate)
Complement 135 (14 officers, 121 men); two alternating crews

Le Redoutable is the first French nuclear powered, ballistic missile armed submarine and the prototype of the "Force Frappe" of three, or possibly five, such vessels which the Navy hopes to have in the 1970s. The ballistic missiles are comparable with the United States "Polaris" weapons, but are of French manufacture with a weight of 15 tons. The diesel has bunkering for a range of 5 000 miles. Diving depth is 660 feet. Three months submerged cruise duration. A third unit of this class is projected, and it has been officially announced that others of the series will be launched every two years.



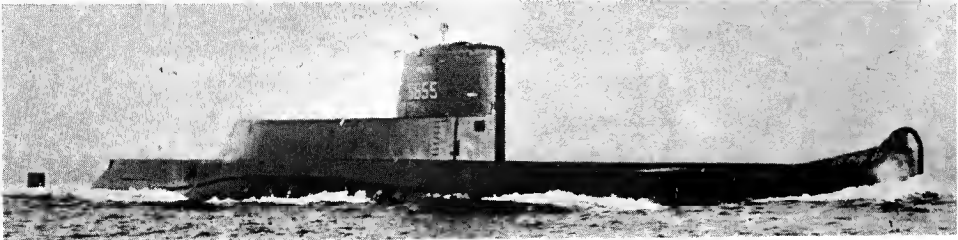
LE REDOUTABLE 1967 French Navy Official)

1 Experimental Missile Type

Displacement, tons 3 800
Length, feet (metres) 275 6 (84 0)
Beam, feet (metres) 34 7 (10 6)
Draught, feet (metres) 25 (7 6)
Missiles, surface 4 tubes for "Polaris" type ICBM's
Main engines 2 600 hp diesels and electric motors; 2 shafts
Speed, knots 11 on surface; 10 submerged
Complement 70 (8 officers, 62 men) plus 40 technicians and engineers

An experimental platform for testing ballistic missiles destined for the first French nuclear powered "Polaris" type submarine, and for use as an underwater laboratory to prove equipment and arms for nuclear submarines.

Name	No	Builders	Laid down	Launched	Completed
GYMNOTE	S 655	Cherbourg Naval Dockyard	17 Mar 1963	17 Mar 1964	17 Oct 1966



GYMNOTE 1966 French Navy Official

11 "Daphne" Class

Name	No	Launched	Completed
DAPHNÉ	S 641	20 June 1959	1 June 1964
DIANE	S 642	4 Oct 1960	20 June 1964
DORIS	S 643	14 May 1960	26 Aug 1964
EURYDICE	S 644	19 June 1962	26 Sep 1964
FLORE	S 645	21 Dec 1960	21 May 1964
GALATÉE	S 646	22 Sep 1961	25 July 1964
JUNON	S 648	11 May 1964	25 Feb 1966
MINERVE	S 647	31 May 1961	10 June 1964
VENUS	S 649	24 Sep 1964	1 Jan 1966

Displacement, tons 850 surface; 1 040 submerged
Length, feet (metres) 190 3 (58 0)
Beam, feet (metres) 22 3 (6 8)
Draught, feet (metres) 15 4 (4 7)
Torpedo tubes 12—21 7 in (550 mm) (8 bow, 4 stern)
Main engines SEMT-Pielstick diesel-electric 1 300 bhp surface, 1 600 hp motors submerged; 2 shafts
Speed, knots 16 surface and submerged
Complement 45 (6 officers, 39 men)

Daphné, Diane and Minerve were built by Dubigeon, Nantes, and Doris, Eurydice, Flore, Galatée, Junon and Venus by Cherbourg.

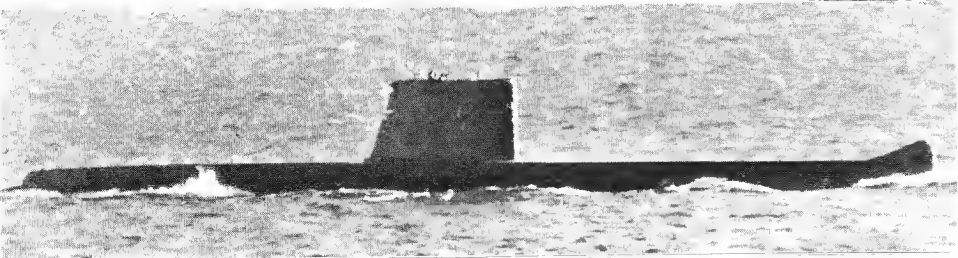
COMPLETION. The revised completion dates given above are the actual dates of "admission to active service" announced officially.

PHOTOGRAPH of Flore appears in the 1961-62 edition.

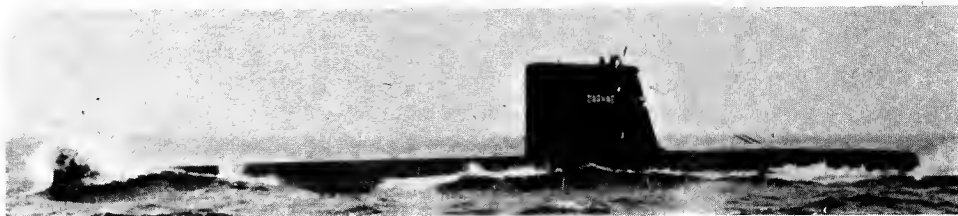
NEW CONSTRUCTION
The construction of two more submarines of this class, known as "Q 253" and "Q 254" until they are officially named, was started at Brest in 1965.



EURYDICE 1966 A. & J. Pavia



GALATÉE 1965, courtesy Dr. Giorgio Arra



DAPHNÉ 1967, French Navy, Official

Submarines—continued

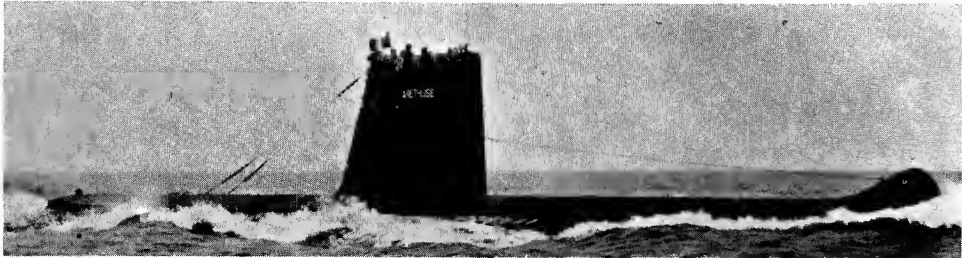
4 "Arethuse" Class

Displacement, tons	400 standard; 529 surface; 650 submerged
Length, feet (metres)	164 (50 0)
Beam, feet (metres)	19 (5 8)
Draught, feet (metres)	12 8 (3 9)
Torpedo tubes	4—21 7 in (550 mm) bow
Main engines	12-cyl. SEMT-Pielstick diesel- electric 1 060 bhp surface; 1 300 hp motors submerged; 1 shaft
Speed, knots	16 on surface; 18 submerged
Complement	45 (6 officers, 39 men)

All built at Cherbourg. Submarine-killer type for hunting enemy submarines. Streamlined hull, silent motors, and up-to-date electronic and detection equipment.

PHOTOGRAPHS. A photograph of *Argonaute* appears in the 1959-60 to 1963-64 editions, of *Amazone* in the 1964-65 and 1965-66 editions, and of *Ariane* in the 1966-67 edition.

Name	No.	Programme	Builders	Laid down	Launched	Completed
AMAZONE	S 639	1954	Cherbourg	Dec 1955	3 Apr 1958	1 July 1959
ARÉTHUSE	S 635	1953	Cherbourg	Mar 1955	9 Nov 1957	23 Oct 1958
ARGONAUTE	S 636	1953	Cherbourg	Mar 1955	29 June 1957	11 Feb 1959
ARIANE	S 640	1954	Cherbourg	Dec 1955	12 Sep 1958	16 Mar 1960



ARETHUSE

1967, French Navy, Official

6 "Narval" Class

Displacement	1 200 standard; 1 640 surface 1 910 submerged
Length, feet (metres)	256 (78 0)
Beam, feet (metres)	23 6 (7 2)
Draught, feet (metres)	18 (5 5)
Torpedo tubes	8—21 7 in (550 mm) quick load- ing (6 bow, 2 stern); 22 torpedoes
Main engines	4 000 bhp Schneider 7-cylinder 2-stroke diesels; 5 000 hp electric motors (submerged); 2 shafts
Speed, knots	16 on surface, 18 submerged
Radius, miles	15 000 at 8 knots with schnorkel
Complement	68 (7 officers, 61 men)

Designed as oceangoing submarines. Improved versions of the German XXI type. *Dauphine*, *Marsouin*, *Narval* and *Requin* were built in seven prefabricated parts each of 10 metres in length.

NOMENCLATURE. *Dauphine* means Dolphin, *Espadon* means Swordfish, *Marsouin* means Porpoise, *Morse* means Walrus, *Narval* means Narwhal, and *Requin* means Shark.

PHOTOGRAPHS of *Narval* as first completed without bulbous bow appear in the 1957-58 edition, a photograph of *Requin* appears in the 1959-60 and 1960-61 editions, and of *Narval* with bulbous bow and of *Dauphin* in the 1957-58 to 1965-66 editions.

RECONSTRUCTION. It was announced in 1965 that these submarines would be reconstructed and given a new propulsion plant. *Requin* and *Espadon* were refitted at Lorient.

ENGINEERING. New main machinery installed on reconstruction includes diesel-electric drive on the surface with SEMT-Pielstick diesels.

DISPOSALS OF "LA CRÉOLE" CLASS
Of "La Créole" class *L'Africaine* was withdrawn from active service on 1 July 1961 (she was reported to be worn out), *La Créole* was officially deleted from the list in Mar 1963, *L'Andromède* and *L'Astrée* in 1965, and *L'Artémis* in 1966.

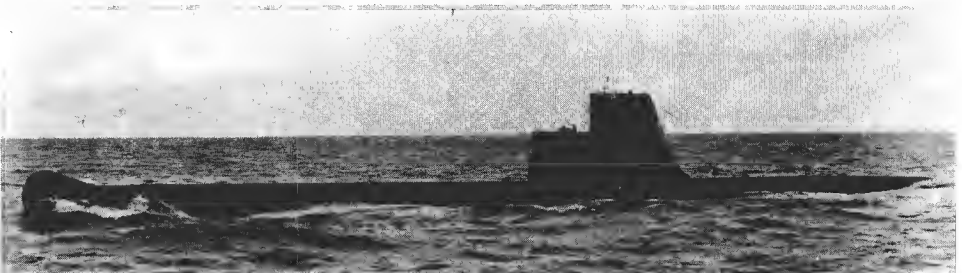
DISPOSALS OF "S" CLASS
Of the former British submarines of the "S" class, *Sirène* was returned to Great Britain at Gosport on 24 Oct 1958, and reverted to the original name *Spiteful*, and *Sultane* was returned to Great Britain at Rosyth on 5 Nov 1959 and reverted to her original name *Statesman*. *Saphir* (ex-*Satyr*) was also returned to Great Britain on 11 Aug 1961 to await disposal at Rosyth. *Sibylle* (ex-*Sportsman*) was lost accidentally with all hands on 23 Sep 1952, near Toulon.

ROLAND MORILLOT (ex-U 2518) S 613

Displacement, tons	1 330 standard; 1 600 surface 1 827 submerged
Length, feet (metres)	237 (72 3) pp; 252 6 (77 0) oa
Beam, feet (metres)	21 7 (6 6)
Draught, feet (metres)	20 7 (6 3)
Main engines	2 MAN 6-cyl. diesels, 2 600 bhp; 2 electric motors, 5 000 hp
Speed, knots	15 on surface, 16 submerged
Radius, miles	11 150 at 12 knots 9 000 at 8 knots with schnorkel

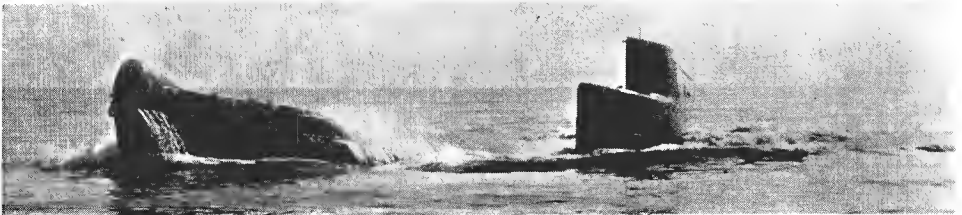
Former German oceangoing Type XXI U-boat. Built by Blohm & Voss, Hamburg and completed in 1945. Transferred by Great Britain to the French Navy in 1945. All torpedo tubes were suppressed in 1964. She is now an experimental submarine.

Name	No.	Programme	Builders	Laid down	Launched	Completed
DAUPHINE	S 633	1950	Cherbourg	Jan 1952	17 Sep 1955	1 Aug 1958
ESPADON	S 637	1954	Normand	Mar 1957	15 Sep 1958	2 Apr 1960
MARSOUIN	S 632	1949	Cherbourg	Nov 1951	21 May 1955	1 Oct 1957
MORSE	S 638	1954	Seine Maritime	Dec 1956	10 Dec 1958	2 May 1960
NARVAL	S 631	1949	Cherbourg	Oct 1951	11 Dec 1954	1 Dec 1957
REQUIN	S 634	1950	Cherbourg	Feb 1952	3 Dec 1955	1 Aug 1958



MORSE

1966, French Navy, Official



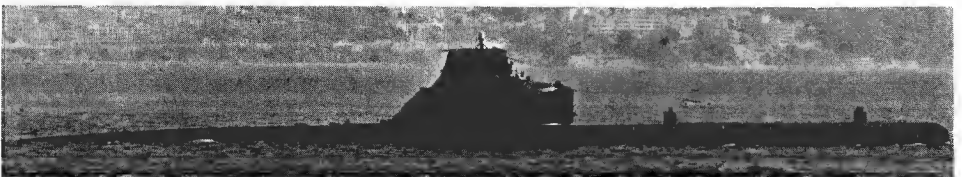
MARSOUIN

1966, French Navy, Official



ESPADON

1967, Wright & Logan



ROLAND MARILLOT

1967, courtesy Dr. Giorgio Arra

DISPOSALS
Blaison (ex-U 123), former German Type IX B, was discarded in 1957. *Bouan* (ex-U 510), former German Type IXC, was scrapped in 1958.

Of the two former German Type VII C boats, *Laubie* (ex-U 766) was withdrawn on 17 Oct 1961 (seriously damaged by collision and scrapped) and *Mille* (ex-U 471) in Aug 1963.

ANTI-AIRCRAFT CRUISERS (Croiseurs Anti-Aérien)

Name	Pennant No.	Builders	Laid down	Launched	Completed	Commissioned
COLBERT	C 611	Brest Dockyard	Dec 1953	24 Mar 1956 (floated out of dry dock)	1958 (trials end of 1957)	5 May 1959

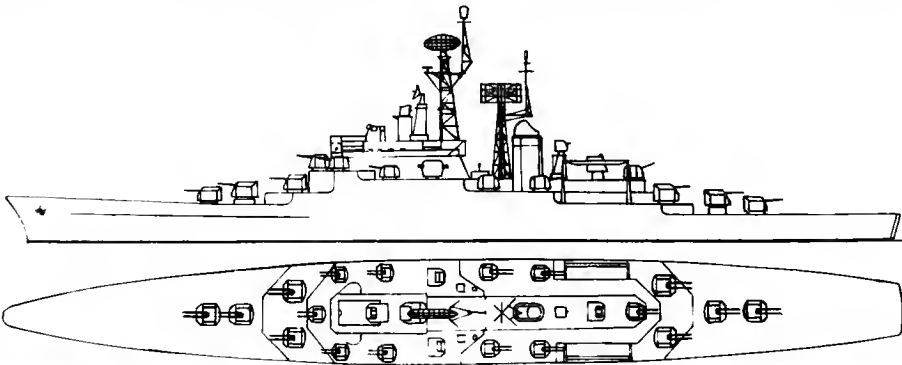
Displacement, tons	9 080 standard; 11 100 full load official revised figures
Length, feet (metres)	574.2 (175.0) pp; 593.2 (180.8) oa
Beam, feet (metres)	64.9 (19.8)
Draught, feet (metres)	21.7 (6.6); 25.2 (7.7) screws
Aircraft	1 Helicopter
Guns, dual purpose	16—5 in (127 mm), 8 twin mountings
Guns, AA	20—57 mm Bofors, 10 twin mountings
Armour	Has some protection. See notes
Boilers	4 Indret multitubular, 640 psi (45 kg/cm ²), 842°F (450°C)
Main engines	2 sets CEM-Parsons geared turbines; 86 000 shp; 2 shafts
Speed, knots	32.4 max (33.7 trials); 15 economical sea
Radius, miles	4 000 at 25 knots
Oil fuel (tons)	1 492
Complement Revised official allowance 1967	
in peacetime	777 (46 officers, 731 men)
in wartime	964 (61 officers, 903 men)

Provision was made in the design so that she can be fitted eventually with guided missiles. Has a new scheme of protection, and a platform for a helicopter. Equipped as a fleet command ship and for radar control of air strikes. As a fast transport she could carry 2 400 men and equipment. Refitted from Oct 1962 to 1963.

GUNNERY. Guns are radar controlled with stabilised gunlayers for automatic tracking.

PHOTOGRAPHS of Colbert before modifications and the suppression of the whaleboat emplacement appear in the 1965-66 and earlier editions.

DRAWING. Port elevation and plan. Redrawn in 1967. Scale 128 feet = 1 inch



COLBERT (whaleboat emplacement suppressed) 1966, French Navy, Official

Name	Pennant No.	Builders	Laid down	Launched	Completed	Commissioned
DE GRASSE	C 610	Lorient Dockyard and Brest Dockyard (see notes)	Nov 1938	11 Sep 1946	Aug 1955 (trials)	3 Sep 1956 (operational)

Displacement, tons	10 238 light; 12 350 full load official revised figures
Length, feet (metres)	617.8 (188.3) oa
Beam, feet (metres)	69.9 (21.3)
Draught, feet (metres)	21.4 (6.53) aft
Guns, dual purpose	12—5 in (127 mm); 6 twin mountings
Boilers	4 A & C de 8 Indret multitubular, 500 psi (35 kg/cm ²); 725°F (385°C)
Main engines	2 sets Rateau-Chantiers de Bretagne geared turbines 105 000 shp; 2 shafts
Speed, knots	33 max (33.8 trials); 18 cruising
Radius, miles	5 200 at 18 knots; 2 500 at full power
Oil fuel (tons)	1 900 normal
Complement Revised official allowance 1967	
in peacetime	651 (38 officers, 615 men)
in wartime	952 (58 officers, 894 men)

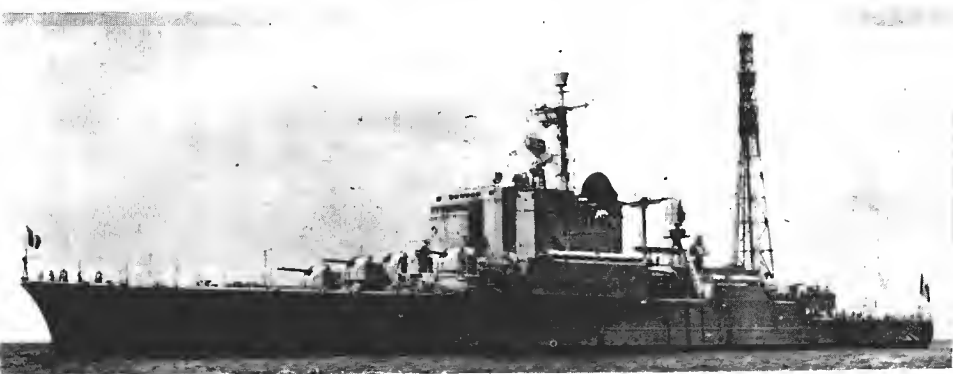
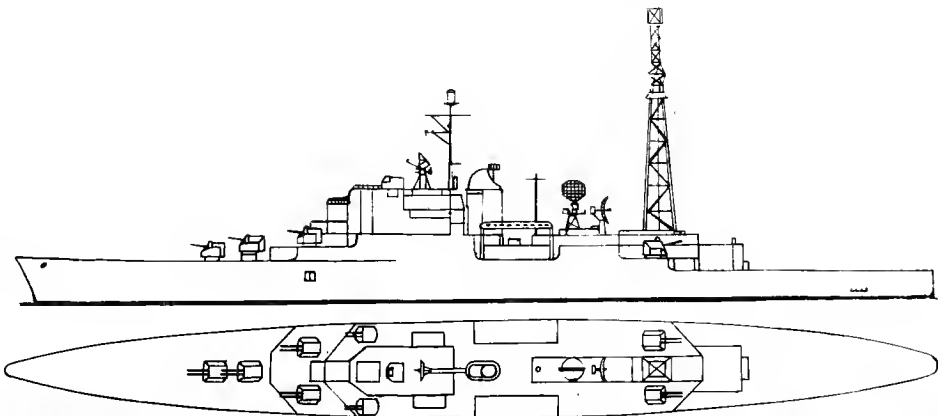
Ordered under the 1937 Estimates. Her construction was suspended during the German occupation of Lorient, but was resumed in 1946 until her launch when building was stopped. Construction was again resumed on 9 Jan 1951. Completed in Brest Dockyard as an anti-aircraft cruiser to a modified design. She is equipped as a fleet command ship and for radar control of air strikes.

MODIFICATIONS. Refitted at Brest as Flagship of the Pacific Experimental Nuclear Centre in 1966. Signal department enlarged, and several turrets suppressed.

GUNNERY. Guns are radar controlled with stabilised gunlayers. All the 57 mm Bofors AA guns (six twin mountings) and two twin 5 inch guns were suppressed during the conversion as flagship of the Pacific Experimental Centre.

PHOTOGRAPHS of De Grasse before conversion from anti-aircraft cruiser to command ship appear in the 1965-66 and earlier editions.

DRAWING. Port elevation and plan. Redrawn in 1967. Scale: 128 feet = 1 inch.



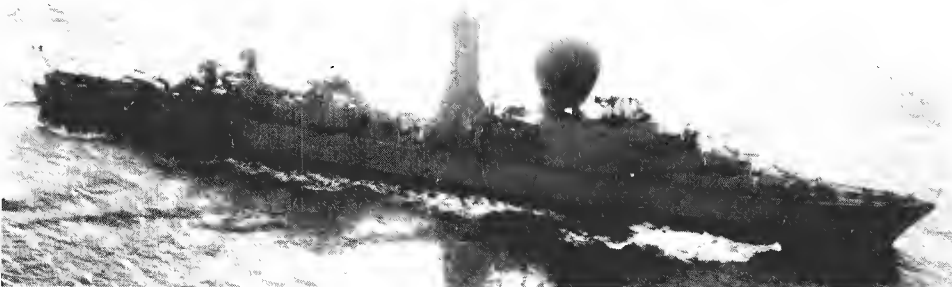
DE GRASSE 1967, French Navy, Official

GUIDED MISSILE FRIGATES (Frigates Lance-Engins)

2 "Suffren" Class (FLE 60 Type)

Displacement, tons	4 700 standard; 5 700 full load
Length, feet (metres)	485.5 (148.0) pp; 518.4 (158.0) oa
Beam, feet (metres)	50.8 (15.5)
Draught, feet (metres)	19.5 (5.9)
Missiles, AA	"Masurca", twin launcher
A/S	"Malaface" rocket/homing torpedo single launcher 13 missiles carried
Guns, AA	2—3.9 in (100 mm) automatic, single
Torpedo launchers	2—30 mm (automatic, single) 4 (2 each side) for A/S homing torpedoes
Boilers	4 automatic; working pressure 640 psi (45 kg/cm ²); superheat 842°F (450°C)
Main engines	Double reduction geared turbines 70 000 shp; 2 shafts
Speed, knots	34
Radius, miles	5 000 at 18 knots
Complement	446 (39 officers, 407 men)

Name	No.	Builders	Laid down	Launched	Trials	Operational
DUQUESNE	D 603	Brest Dockyard	Nov 1964	12 Feb 1966	Jan 1968	1969
SUFFREN	D 602	Lorient Dockyard	Dec 1962	15 May 1965	Dec 1965	1967

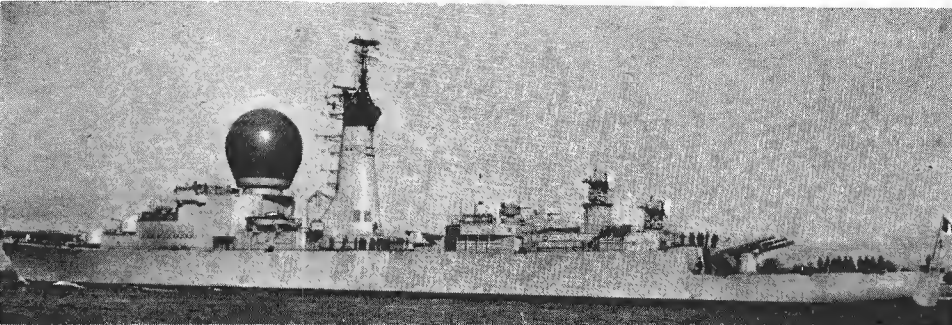


SUFFREN 1966, French Navy, Official

Ordered under the 1960 Programme. The structure of the ship provides the best possible resistance to atomic blast. Fitted with up-to-date detection devices (radar and sonar), two sonars including VDS, and SENIT tactical information system. Carefully studied habitability is a feature of the design. Equipped with stabilisers. Originally to have carried an anti-submarine helicopter. Only two ships of the class will now be built instead of the three originally projected. Other frigates of the same type but of larger size will be built later.

DESIGN. There have been several recastings of the design, see silhouette drawing in the 1961-62 and 1962-63 editions, and photograph of the interim model in the 1963-64 and 1964-65 editions. A photograph of the ultimate model and an official sketch appear in the 1965-66 edition.

RECLASSIFICATION. Until 1961 this type was officially known as "guided missile cruiser", but as it more nearly approximated to the current destroyer leader category it was reclassified as "guided missile frigate".



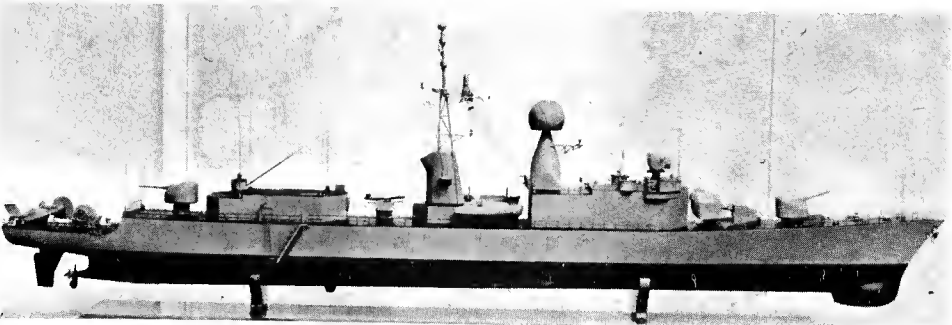
SUFFREN 1966, French Navy, Official

5 New Construction "Aconit" Class

ACONIT

Displacement, tons	3 200 standard; 3,560 full load; (official revised figures)
Length, feet (metres)	416.7 (127.0) oa
Beam, feet (metres)	44.0 (13.4)
Missiles, A/S	"Malaface" rocket/homing torpedo
Guns, AA	2—3.9 in (100 mm)
A/S	1 quadruple 12 in (305 mm) mortar
Torpedo tubes	Auto guided torpedoes
Main engines	Geared turbines; 27 200 shp; 1 shaft
Speed, knots	26.5 max
Radius, miles	5 000 at 18 knots
Complement	252 (22 officers, 230 men)

Provided for under the Second Five Year Plan. From their size and armament they can logically be described as frigates. But an official statement runs: "5 Corvettes—These ships will be primarily anti-submarine ships with advanced armament and sonar apparatus including variable depth sonar, bow sonar and Malaface system.



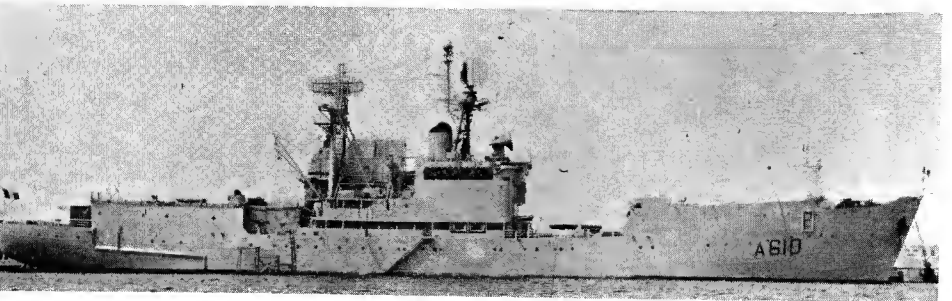
ACONIT 1967, French Navy, Official

EXPERIMENTAL GUIDED MISSILE SHIP (ex-Transport)

ILE d'OLERON (ex-München, ex-Mur)

Displacement, tons	3 280 standard; 7 500 full load
Length, feet (metres)	350 (106.7) pp; 377.5 (115.2) oa
Beam, feet (metres)	50 (15.2)
Draught, feet (metres)	21.3 (6.5)
Main engines	MAN 6-cylinder diesels 3 500 bhp; 1 shaft
Speed, knots	14.5
Oil fuel (tons)	340
Radius, miles	7 200 at 12 knots 5 900 at 14 knots
Complement	195 (15 officers, 180 men)

Launched in Germany in 1939. Taken as a war prize. Formerly rated as a transport. Employed as accommodation vessel at Brest until converted into an experimental guided missile ship in 1957-58 by Chantiers de Provence et l'Arsenal de Toulon. Commissioned as a test bed early in 1959. Equipped with stabilisers.



ILE d'OLÉRON 1967, courtesy Dr. Giorgio Arra

EXPERIMENTAL. When converted she was designed for experiments with two launchers for ship to air missiles, the medium range "Masurca" and the long range "Masalca", and one launcher for ship to shore missiles, the "Malaface". Latterly fitted with one launcher for target planes.

DESTROYERS (Rated as Escorteurs d'Escadre)

Name	Pennant No.	Builders	Laid down	Launched	Completed
LA GALISSONNIÈRE	D 638	Lorient Naval Dockyard	Nov 1958	12 Mar 1960	July 1962

1 Anti-Submarine (T 56) Type

Displacement, tons	2 750 standard, 3 910 full load, official revised figures	Main engines	63 000 shp (72 000 on trials, light) 2 shafts	a helicopter. When first commissioned she was used as an experimental ship for new sonars and anti-submarine weapons.
Length, feet (metres)	435.7 (132.8) oa	Speed, knots	34.5 (38.2 on trials, light), 15 sea	
Beam, feet (metres)	41.7 (12.7)	Radius, miles	4 900 at 18 knots	ARMAMENT. She is fitted with French marks of guided missiles and was the first French combatant ship to be so armed. This is the reason for the two 3.9 in (100 mm) guns instead of the 3 or 4 previously planned. As re-designed she was France's first operational guided missile ship.
Draught, feet (metres)	15.4 (4.7) aft, 18.0 (5.5) screws	Oil fuel (tons)	725	
Aircraft	1 A/S helicopter	Complement	333 (20 officers, 313 men)	PHOTOGRAPHS of <i>La Galissonniere</i> as first completed appear in the 1962-63 edition, and a starboard bow view in the 1963-64 to 1965-66 editions.
A/S	"Malafon" rocket/homing torpedoes, 1 launcher	Designed as a squadron escort and flotilla leader. She has extensive sonar and anti-submarine apparatus, including variable depth sonar and homing torpedoes. Particularly well developed anti-aircraft and radar equipment. T 56 type. Same characteristics as regards hull		
Guns, AA	2—3.9 in (100 mm) automatic single			
A/S	1—12 in (305 mm) quadruple mortar			
Torpedo tubes	6—21.7 in (550 mm) ASM, 2 triple			



LA GALISSONNIÈRE 1966, French Navy, Official

Name	Pennant No.	Builders	Laid down	Launched	Completed (commissioned)
DUPERRÉ	D 633	Lorient Naval Dockyard	Nov 1954	2 July 1955	8 Oct 1957
FORBIN	D 635	Brest Naval Dockyard	Aug 1954	15 Oct 1955	1 Feb 1958
JAURÉGUIBERRY	D 637	Forges et Chantiers de la Gironde	Sep 1954	5 Nov 1955	July 1958
LA BOURDONNAIS	D 634	Brest Naval Dockyard	Aug 1954	15 Oct 1955	Mar 1958
TARTU	D 636	Ateliers et Chantiers de Bretagne	Nov 1954	2 Dec 1955	5 Feb 1958

5 "Duperré" Class
Aircraft Direction (T 53) Type

Displacement, tons	2 750 standard, 3 750 full load
Length, feet (metres)	422 (128.6) oa
Beam, feet (metres)	41.7 (12.7)
Draught, feet (metres)	15.0 (4.6) aft, 17.7 (5.4) screws
Guns, dual purpose	6—5 in (127 mm), twin mounts
Guns, AA	6—2.25 in (57 mm) Bofors
A/S	2 or 4—20 mm Sextuple Bofors lance roquettes howitzer
Torpedo tubes	6—21.7 in (550 mm) ASM, 2 triple (also able to launch ordinary torpedoes)
Boilers	4 Indret or A & C de B in two boiler rooms separated by turbine compartment Working pressure 500 psi (35.2 kg/cm ²); superheat 725° F (385° C)
Main engines	2 ACL geared turbines 63 000 shp, 2 shafts 34 max (35 trials)
Speed, knots	5 000 at 18 knots
Radius, miles	700
Oil fuel (tons)	281 (19 officers, 262 men) in peacetime;
Complement	354 (21 officers, 333 men) in wartime



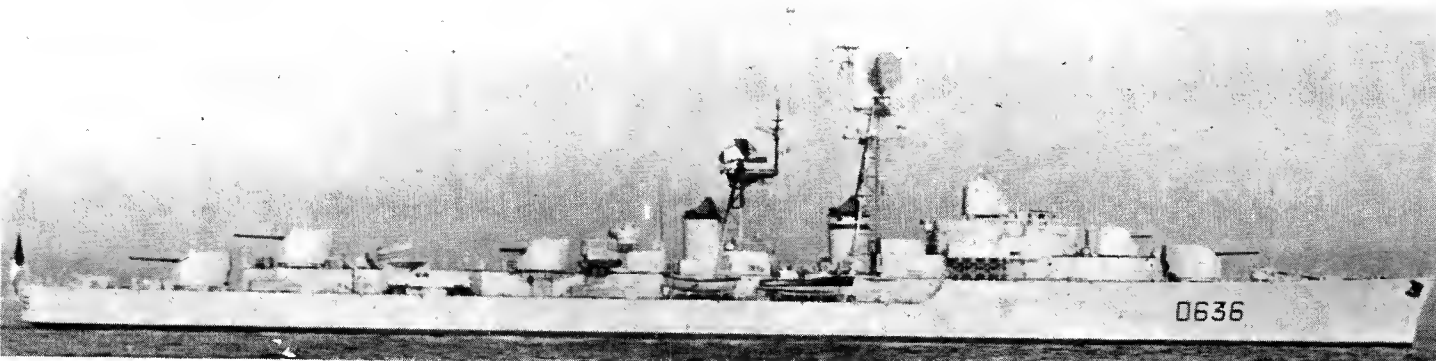
LA BOURDONNAIS 1966, Dr. Giorgio Arra

Radar Picket Destroyers. Modified "Surcouf" Class or "T 53 R" Type. Specially fitted as aircraft direction and command ships. Radar equipment is more comprehensive and prominent than in the original "Surcouf" or "T 47" Anti-Aircraft Type and gives them a different appearance. All authorised under the 1953 Programme. These vessels were classed as Escorteurs Rapides in 1953, but re-rated as Escorteurs in 1955. Latest electronic appliances provided. Named after famous sailors.

CONSTRUCTION. Hull entirely welded. Light alloys used extensively for upperworks.

GUNNERY. The 5 inch guns are able to use standard American ammunition.

PHOTOGRAPHS of *Forbin* appear in the 1958-59 to 1962-63 editions, of *Duperré* in the 1962-63 to 1965-66 editions, and a port broadside view of *Tartu* in the 1963-64 to 1965-66 editions.



TARTU 1966, French Navy, Official

Destroyers—continued

12 "Surcouf" Class

		Name	No.	Builders	Laid down	Launched	Completed
Bouvet	} Rearmed with guided missiles	BOUVET	D 624	Lorient Naval Dockyard	June 1952	3 Oct 1953	13 May 1956
Du Chayla		CASABIANCA	D 631	A. C. Bretagne	Oct 1953	13 Nov 1954	4 May 1957
Dupetit Thouars		CASSARD	D 623	A. C. Bretagne	Nov 1951	12 May 1953	14 Apr 1956
Kersaint		CHEVALIER PAUL	D 626	F. C. Gironde	Feb 1952	28 July 1953	22 Dec 1956
Cassard	} Converted to command ships	D'ESTRÉES	D 629	Brest Naval Dockyard	May 1953	27 Nov 1954	19 Mar 1957
Chevalier Paul		DU CHAYLA	D 630	Brest Naval Dockyard	July 1953	27 Nov 1954	4 June 1957
Surcouf		DUPETIT THOUARS	D 625	Brest Naval Dockyard	Mar 1952	4 Feb 1954	15 Sep 1956
Casabianca		GUÉPRATTE	D 632	F. C. Gironde	Aug 1953	9 Nov 1954	6 June 1957
D'Estrées	} Original anti-aircraft T 47 type to be converted to anti-submarine	KERSAINT	D 622	Lorient Naval Dockyard	Nov 1951	3 Oct 1953	20 Mar 1956
Guépratte		MAILLÉ BRÉZÉ	D 627	Lorient Naval Dockyard	Oct 1953	26 Sep 1954	4 May 1957
Maillé Brézé		SURCOUF	D 621	Lorient Naval Dockyard	July 1951	3 Oct 1953	1 Nov 1955
Vauquelin		VAUQUELIN	D 628	Lorient Naval Dockyard	Mar 1953	26 Sep 1954	3 Nov 1956

Displacement, tons 2 750 standard; 3 850 full load
Length, feet (metres) 421.3 (128.4) oa
Beam, feet (metres) 42.6 (13.0)
Draught, feet (metres) 15.8 (4.8) aft; 18.3 (5.6) screws
Missiles, AA Single "Tartar" Mark 13 (40 missiles) in *Bouvet*, *Du Chayla*, *Dupetit Thouars* and *Kersaint* only
Guns, dual purpose 6—5 in (127 mm), twin mounts
Guns, AA 6—57 mm; 6—20 mm
Torpedo tubes 12—21.7 in (550 mm) in 4 triple mounts, (6 ordinary, 6 ASM)
Boilers 4 Indret; 500 psi (35.2 kg/cm²) superheat 725°F (385°C)
Main engines 2 Parsons geared turbines
63 000 shp; 2 shafts
Speed, knots 35 max
Radius, miles 5 000 at 18 knots
Oil fuel (tons) 800
Complement 293 (336 with command staff)

Designed as *Escorteurs Rapides Anti-aériens* but re-rated *Escorteurs Première Classe* in 1951, *Escorteurs Rapides* in 1953 and *Escorteurs d'Escadre* in 1955. Named after famous French sailors.

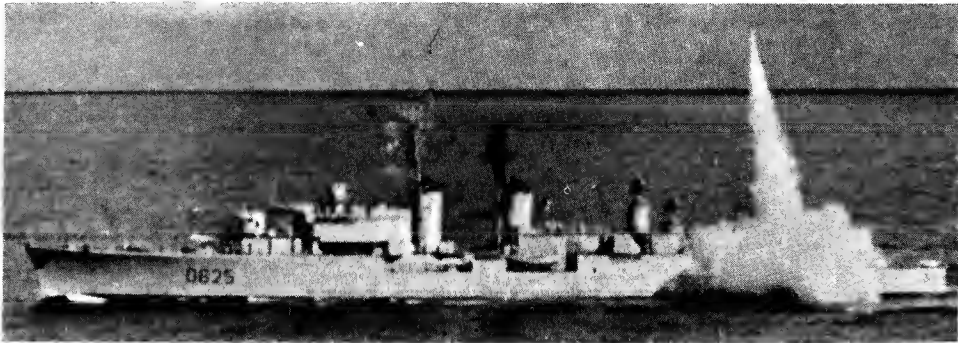
CONSTRUCTION. Hull entirely welded, assembled from 84 prefabricated sections with a total weight of 1 100 tons. Light alloys used extensively for upperworks. Two boiler rooms alternate with two turbine.

GUNNERY. The semi-automatic 5 inch guns were chosen so that they could use standard US ammunition.

COMMAND. *Cassard*, *Chevalier Paul* and *Surcouf*, refitted as flotilla leaders, retained their 6—5 inch guns but only 4—57 mm AA and 6 tubes for ASM torpedoes.

CONVERSION. Since Jan 1966 *D'Estrées* has been undergoing conversion into an anti-submarine vessel, followed in order by *Maillé Brézé*, *Casabianca* and *Guépratte*. New armament: 2—3.9 in (100 mm) AA, 1 Malafon missile launcher, 6 A/S tubes (2 triple), 1 Bofors rocket launcher, variable depth sonar and bow sonar.

PHOTOGRAPHS of *Vauquelin* appear in the 1957-58 to 1962-63 editions. *Guépratte* in the 1959-60 to 1961-62 editions, *Cassard* in the 1962-63 to 1965-66 editions, and *D'Estrées* in the 1963-64 to 1965-66 editions.



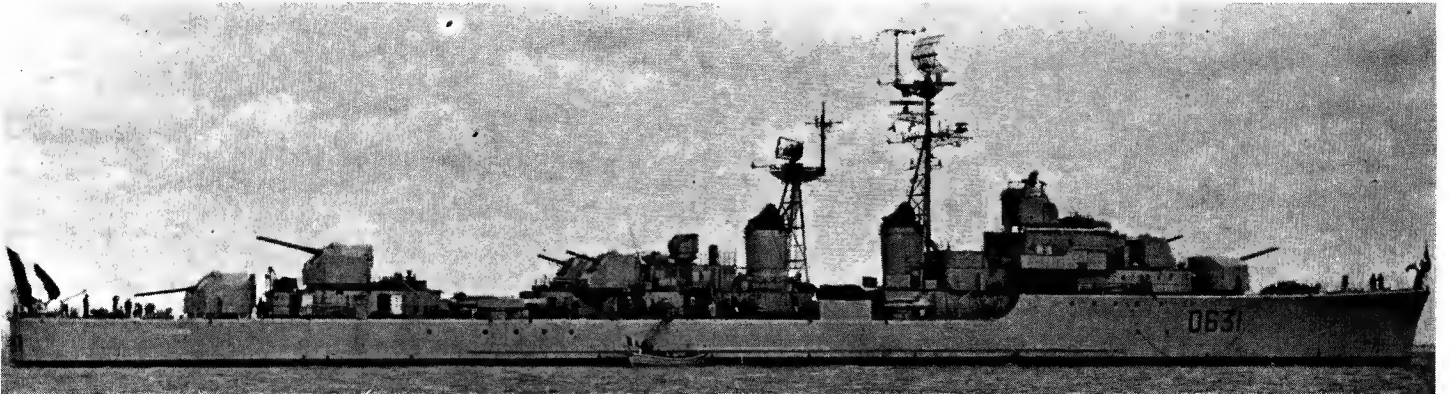
DUPETIT THOUARS (firing guided missiles)

1966, French Navy, Official



BOUVET (missile launcher aft)

1967, French Navy, Official



CASABIANCA (anti-aircraft type)

1966, Dr. Giorgio Arra



SURCOUF (command type)

1966, Dr. Giorgio Arra

DUAL PURPOSE FRIGATES (Rated as Avisos Escorteurs)

9 "Commandant Riviere" Class

	Launched	Completed
AMIRAL CHARNER	12 Mar 60	15 Dec 62
BALNY	17 Mar 62	Mar 68
COMMANDANT BORY	11 Oct 58	5 Mar 64
COM'DANT BOURDAIS	15 Apr 61	1 Mar 63
COM'OANT RIVIERE	11 Oct 58	4 Dec 62
DOUDART OE LA GRÉE	15 Apr 61	1 Mar 63
ENSEIGNE HENRY	14 Dec 63	1 Jan 65
PROTET	7 Dec 62	1 May 64
VICTOR SCHOELCHER	11 Oct 58	15 Oct 62

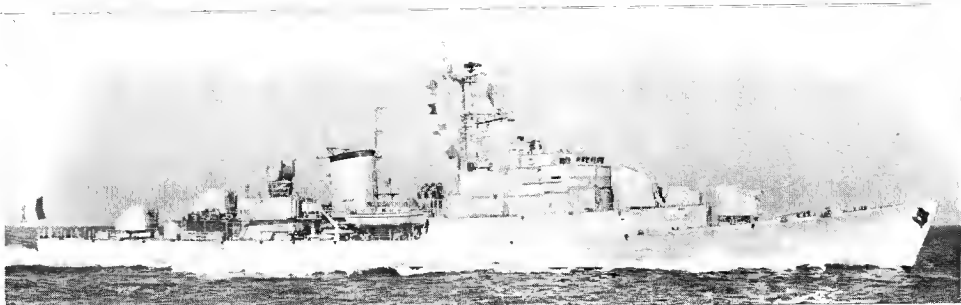
Displacement, tons	1 750 standard; 1 950 full load
Length, feet (metres)	321.5 (98.0) pp; 338 (103) oa
Beam, feet (metres)	37.8 (11.5)
Draught, feet (metres)	12.5 (3.8) mean; 14.1 (4.3) max
Aircraft	1 light helicopter can land aft
Guns, AA	3—3.9 in (100 mm) automatic, singles; 2—30 mm
A/S	1—12 in (305 mm) quadruple mortar
Torpedo tubes	6—21 in (533 mm) ASM
Main engines	4 SEMT-Pielstick diesels, 16 000 bhp; 2 shafts; except Commandant Bory, Sigma free piston generators and gas turbines
	Balny gas turbines, 1 shaft
Speed, knots	25.4 max (26.4 trials)
Radius, miles	4 500 at 15 knots
Complement	214 (15 officers, 199 men)

All built by Lorient Naval Dockyard. Commandant Riviere started assembly on slip in Nov 1956 and preliminary sea trials on 1 Apr 1959. Formerly classed as Escorteurs d'Union Francaise. Officially rerated as Avisos Escorteurs on 1 Apr 1959. Designed to serve as avisos in peace and frigates in war. Commandant Bourdais commissioned as fishery protection ship for Newfoundland and Greenland in Mar 1963. Victor Schoelcher acts as training ship. PHOTOGRAPHS of Commandant Riviere appear in the 1960-61 to 1964-65 editions, and of Doudart de la Grée in the 1964-65 and 1965-66 editions.



COMMANDANT BORY

1966, French Navy, Official



ENSEIGNE HENRY

1965, French Navy, Official

FAST FRIGATES (Rated as Escorteurs Rapides)

14 "Le Normand" Class (E 52 Type)

Displacement, tons	1 295 standard; 1 795 full load
Length, feet (metres)	311.7 (95.0) pp; 325.8 (99.3) oa
Beam, feet (metres)	33.8 (10.3)
Draught, feet (metres)	11.2 (3.4) aft; 13.5 (4.1) screws
Guns, AA	6—2.25 in (57 mm), in twin mountings (4 only in F 776, 777, 778); 2—20 mm
A/S	Heavy sextuple Bofors ASM (lance-roquettes) mortar of Hedgehog type forward (except F 776, 777, 778 with 1—12 in (305 mm) quadruple mortar)
Torpedo tubes	2 DC mortars, 1 DC rack
Boilers	2 Indret; pressure 500 psi (35.2 kg/cm ²); superheat 725°F (385°C)
Main engines	Parsons or Rateau geared turbines 20 000 shp
Speed, knots	28 (on trials they exceeded 29 kts)
Radius, miles	4 500 at 12 knots
Oil fuel (tons)	310
Complement	175 peace; 200 war

The E 52a type have similar characteristics to the E 50 type as regards hull and machinery but are easily distinguished in that they have the ASM tubes aft and the heavy hedgehog or ASM howitzer forward while the E 50 type have the ASM torpedo tubes forward. L'Agenais, L'Alsacien, Le Béarnais, Le Provençal and Le Vendéen have a different arrangement of bridges. L'Alsacien, Le Provençal, and Le Vendéen have the Strombos-Velensi type modified funnel cap, and differ in armament, with a 12-inch quadruple mortar in place of the sextuple Bofors' howitzer and only 4—57 mm AA guns.

PHOTOGRAPHS of Le Gascon appear in the 1957-58 to 1959-60 editions, of L'Agenais in the 1958-59 and 1960-61 to 1963-64 editions, of Le Bourguignon in the 1962-63 and 1963-64 editions, of Le Savoyard in the 1964-65 and 1965-66 editions, of Le Vendéen in the 1964-65 to 1966-67 editions, and of Le Breton in the 1966-67 edition.

CANCELLATION. The construction of the two frigates of the "E 52b" type, which were to have been provided under the 1957 naval estimates, was abandoned.

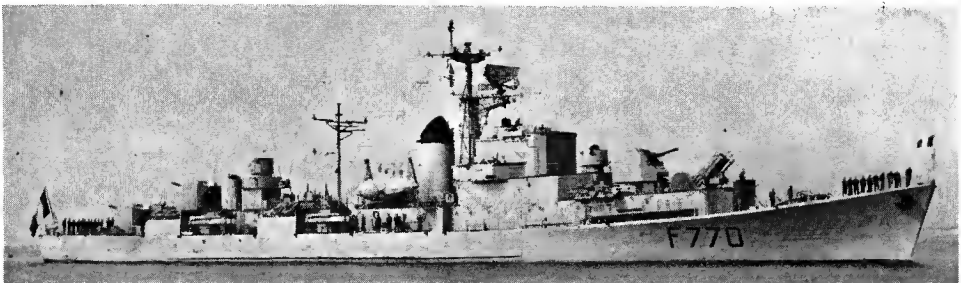
DISPOSALS OF EX-BRITISH "RIVER" TYPE Of the "L'Aventure" class, La Decouverte (ex-HMS Windrush) was condemned in May 1961, and La Croix de Lorraine (ex-HMS Strule, ex-Glenarm), L'Ailette (ex-L'Escarmouche, ex-HMS Frome) and La Confiance (ex-Tonkinois, ex-HMS Malaya) in Sep 1961. L'Aventure was withdrawn from service on 15 Dec 1961. La Surprise was sold to Morocco in June 1964.

Name	No.	Builders	Laid down	Launched	Completed
LE NORMAND	F 765	F. Ch. de la Medit	July 1953	13 Feb 1954	3 Nov 1956
LE LORRAIN	F 768	F. Ch. de la Medit	Feb 1954	19 June 1954	1 Jan 1957
LE PICARD	F 766	A. C. Loire	Nov 1953	31 May 1954	20 Sep 1956
LE GASCON	F 767	A. C. Loire	Feb 1954	23 Oct 1954	29 Mar 1957
LE CHAMPENOIS	F 770	A. C. Loire	May 1954	12 Mar 1955	1 June 1957
LE SAVOYARD	F 771	F. Ch. de la Medit	Nov 1953	7 May 1955	14 June 1956
LE BOURGUIGNON	F 769	Penhoet	Jan 1954	28 Jan 1956	11 July 1957
LE BRETON	F 772	Lorient Navy Yard	June 1954	2 Apr 1955	20 Aug 1957
LE BASQUE	F 773	Lorient Navy Yard	Dec 1954	25 Feb 1956	18 Oct 1957
L'AGENAIS	F 774	Lorient Navy Yard	Aug 1955	23 June 1956	14 May 1958
LE BÉARNAIS	F 775	Lorient Navy Yard	Dec 1955	23 June 1956	18 Oct 1958
L'ALSACIEN	F 776	Lorient Navy Yard	July 1956	26 Jan 1957	27 Aug 1960
LE PROVENÇAL	F 777	Lorient Navy Yard	Feb 1957	5 Oct 1957	6 Nov 1959
LE VENDEEN	F 778	F. Ch. de la Medit	Mar 1957	27 July 1957	1 Oct 1960



L'ALSACIEN

1967, French Navy, Official



LE CHAMPENOIS

1967, Wright & Logan

Fast Frigates (Rated as *Escorteurs Rapides*)

4 "Le Corse" Class
(E 50 Type)

Displacement, tons	1 290 standard; 1 528 for trials; 1 680 full load (official revised figures)
Length, feet (<i>metres</i>)	311.7 (95.0) pp; 325.5 (99.2) oa
Beam, feet (<i>metres</i>)	33.8 (10.3)
Draught, feet (<i>metres</i>)	11.2 (3.4) aft; 13.5 (4.1) screws
Guns, AA	6—2.25 in (57 mm), twin mounts
A/S	2—20 mm
Torpedo tubes	2 mortars; 1 DC rack; 1 sextuple "lance roquettes"
Boilers	12 ASM tubes (four triple mounts forward) for homing torpedoes
Main engines	2 Indret; pressure 500 psi (35.2 kg/cm ²); superheat 725°F (385°C)
Speed, knots	Rateau A & C de B geared turbines 20 000 shp
Radius, miles	28.5 max, 28.9 trials (<i>Bordelais</i> 29.5 on trials); economical sea speed 14
Complement	4 000 at 15 knots
	174 peace, 198 war

Intended as seagoing convoy escort vessels with a large radius of action. Designed as *Escorteurs Rapides Anti-Sousmarins*. Re-rated as *Escorteurs de Deuxième Classe* in 1951, as *Escorteurs* in 1953, and as *Escorteurs Rapides* in 1955. First four laid down are E 50 type, remainder E 52 type. *Le Bordelais* has Strombos-Velensi type modified funnel cap. *Le Brestois* has similar mainmast to that in *Le Provençal*.

GUNNERY. *Le Brestois* had a single 3.9 in (100 mm) automatic AA gun mounted in place of the after twin mounting for experimental purpose, and after her refit completed in 1963 she retains this mounting.

STATUS. *Le Boulonnais* and *Le Corse* were placed in normal reserve status on 1 Dec 1964.

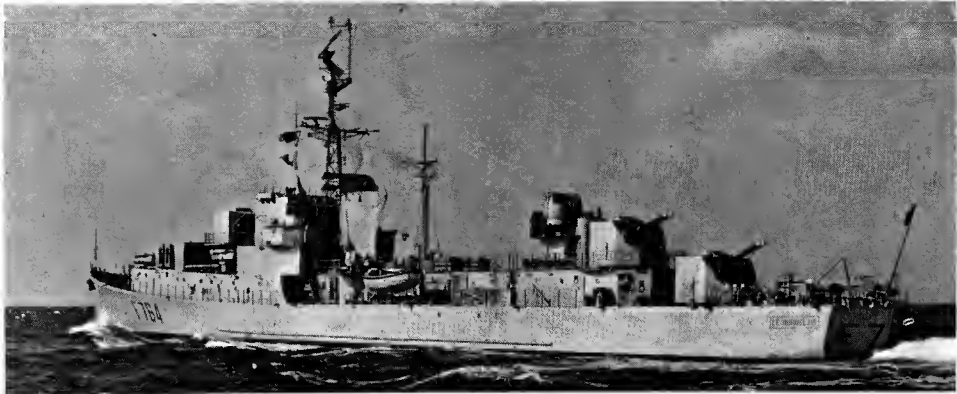
PHOTOGRAPHS of *Le Boulonnais* appear in the 1956-57, 1957-58, 1963-64, 1964-65 and 1965-66 editions, of *Le Corse* in the 1955-56 to 1957-58 editions, and of *Le Bordelais* in the 1957-58 to 1962-63 editions.

Name	No.	Builders	Laid down	Launched	Completed
LE BORDELAIS	F 764	F. Ch. de la Médit	May 1952	11 July 1953	7 Apr 1955
LE BOULONNAIS	F 763	A. C. Loire	Mar 1952	12 May 1953	5 Aug 1955
LE BRESTOIS	F 762	Lorient Navy Yard	Nov 1951	16 Aug 1952	19 Jan 1956
LE CORSE	F 761	Lorient Navy Yard	Oct 1951	5 Aug 1952	15 Apr 1955



LE CORSE

1966, Stefan Terzibaschitsch



LE BORDELAIS

1966, French Navy, Official

FRIGATES (Rated as *Avisos*) Ex-*Escorteurs*

Ex-U.S. Destroyer Escort Type
2 "Arabe" Class

Displacement, tons	1 300 standard; 1 650 full load
Length, feet (<i>metres</i>)	300 (91.4) pp; 306 (93.3) wl
Beam, feet (<i>metres</i>)	36.8 (11.2)
Draught, feet (<i>metres</i>)	10.7 (3.3)
Guns, AA	<i>Malgache</i> : 2—3 in (76 mm) 6—40 mm; 14—20 mm <i>Somali</i> : All guns removed
Main engines	4 GE diesels, 2 electric motors; diesel-electric drive
Speed, knots	6 000 bhp; 2 shafts
Radius, miles	19 (economical speed 12 kts)
Complement	11 500 at 11 knots
	150 peace; 185 war

Somali is the sole survivor of the first group of six ships acquired from the United States in 1944. These were formerly rated as *Torpilleurs d'Escorte*, but re-rated *Escorteurs de Deuxième Classe* in 1951. Six more DEs of this "Bostwick" class were transferred from the USA in Mar 1950 under the Atlantic Pact. Two more including *Malgache* were transferred from the USA on 29 Mar 1952 at Brooklyn. All re-rated as *Escorteurs* in 1953 and as *Avisos* in 1964.

AMPHIBIOUS. *Malgache* is now command ship at the Amphibious Training Centre (CIOA) at Lorient. She no longer carries any anti-submarine armament.

EXPERIMENTAL. *Somali* was converted into an experimental vessel in 1956 and her armament landed, her pennant number subsequently being changed from F 703 to A 607.

PHOTOGRAPH of *Somali* with F pennant number appears in the 1957-58 to 1959-60 editions.

DISPOSALS
Sister ships *Hova* (ex-DE 110), *Marocain* (ex-DE 109) and *Tunisien* (ex-Crosley, DE 108) of the 1st Group, and *Arabe* (ex-Samuel S. Miles, DE 183), *Berbère* (ex-Clarence L. Evans, DE 113) and *Sakalave* (ex-Wingfield, DE 194) were officially stricken from the list in 1960. *Oise* (ex-Algérien, ex-Cronin, DE 107) and *Yser* (ex-Sénégalais, ex-Corbesier, DE 106) of the 1st Group, and *Bambara* (ex-Sweaver, DE 186), *Kayble* (ex-Riddle, DE 185), *Soudanais* (ex-Cates, DE 763) and *Touareg* (ex-Bright, DE 747) were officially deleted from the list in 1965.

Name	No.	Builders	Launched	Completed
MALGACHE (ex-USS <i>Baker</i> DE 190)	F 724	Federal S.B. & D.D. Co	28 Nov 1943	23 Dec 1943
SOMALI (ex-USS DE 111)	A 607	Dravo Corp, Wilmington	12 Feb 1944	9 Apr 1944



MALGACHE

1964, Stefan Terzibaschitsch



SOMALI

1965, French Navy, Official

Ex-FRIGATES (Rated as Avisos Hydrographes)

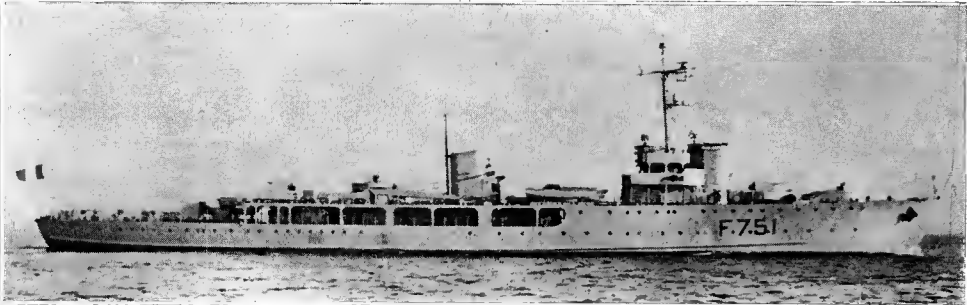
2 "Beautemps-Beaupré" Class

Displacement, tons 1 327 standard; 2 000 full load
Length, feet (metres) 311·7 (95·0)
Beam, feet (metres) 38·5 (11·7)
Draught, feet (metres) 10·5 (3·2)
Guns, surface 1—4·1 in (105 mm) German
Guns, AA 2—40 mm; 4—20 mm
Main engines Sulzer diesels
4 200 bhp; 2 shafts
Speed, knots 16
Radius, miles 12 000 at 10 knots
Complement 152 (12 officers, 140 men)

Originally rated as Avisos Coloniaux Hydrographes. Re-rated as Escorteurs de Deuxième Classe in 1953, as Avisos Escorteurs 11 Aug 1953, and as Avisos in 1955. Used as survey ships (Bâtiments Hydrographes) and officially re-rated as such in 1966.

PHOTOGRAPH of *La Pérouse* appears in the 1955-56 to 1963-64 editions.

Name	No.	Builders	Laid down	Launched	Completed
BEAUTEMPS-BEAUPRÉ (ex-Sans Souci)	A 752 (ex-F 751)	Penhoët	1940	1941	8 May 1947
LA PÉROUSE (ex-Sans Peur)	A 753 (ex-F 750)	Penhoët	1940	1941	23 Apr 1947



BEAUTEMPS-BEAUPRÉ 1964, French Navy, Official

1 "Commandant Robert Giraud" Class

Displacement, tons 1 000 standard; 1 380 full load
Length, feet (metres) 239 (72·9) pp; 256 (78·0) oa
Beam, feet (metres) 36 (11·0)
Draught, feet (metres) 12 (3·7)
Guns, surface 1—4·1 in (105 mm)
Guns, AA 2—40 mm; 2—20 mm
Main engines 4 MAN diesels
8 800 bhp; 2 shafts
Speed, knots 20·5
Radius, miles 7 800 at 12 knots
Oil fuel (tons) 236
Complement 77

Former dépanneur d'hydravions, ex-German aircraft tender. Transferred by Great Britain in Aug 1946, with *Commandant Robert Giraud*. Re-rated as Escorteur de Deuxième Classe early in 1953, as Aviso Escorteur on 11 Aug 1953 and as Aviso in 1955. Formerly used as patrol and escort vessel, support gunboat and carrier for commandos, but used as a bâtiment océanographe since 1965, and officially re-rated as a survey ship in 1966. The four diesels are coupled two by two by hydraulic transmission on two shafts. Sister ship *Commandant Robert Giraud* was reclassified as a gabare (boom defence vessel) in 1963 and is listed on a later page.

Name	No.	Builders	Launched	Completed
PAUL GOFFENY (ex-Max Stinsky)	A 754 (ex-F 754)	Norderwerft, Hamburg	1940	7 Aug 1941



PAUL GOFFENY Added 1964, French Navy, Official

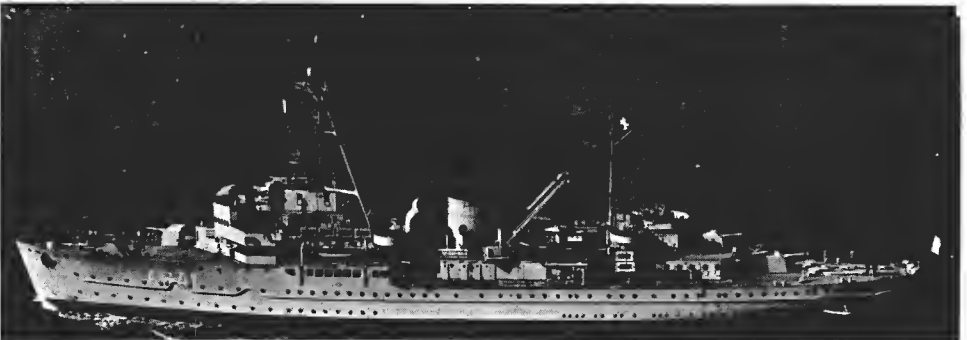
DISPOSALS OF CORVETTES (AVISOS)
The three corvettes of the later "Chamois" Class, *Bisson*, *Commandant Amyot D'Inville* and *Commandant De Pimodan* were officially stricken from the list in 1965. Of the three corvettes of the Early "Chamois" Class, *Chamois* was transferred to the Royal Moroccan Navy on 7 Nov 1961 and renamed *El Lahiq*. *Gazelle* was condemned in Mer 1961, and *Chevreuil* was transferred to the Tunisian Navy on 13 Oct 1959 and renamed *Dustur*. Of the nine corvettes of the "Elan" Class, *La Moqueuse* was officially stricken from the list in 1965 and sunk as a target by aircraft, *La Capricieuse* was scrapped in Dec 1963, *Commandant Delage*, *Commandant Dominé* (ex-*La Rieuse*) and *Commandant Duboc* in 1961, *Elan*, *La Boudeuse* and *La Gracieuse* in 1958, and *Commandant Bory* in 1953.

COMMAND SHIP (Bâtiment de Commandement)

GUSTAVE ZEDE (ex-Saar) A 641

Displacement, tons 2 895 standard; 3 230 full load
Length, feet (metres) 308 (93·9)
Beam, feet (metres) 44·5 (13·5)
Draught, feet (metres) 14 (4·3)
Guns, surface 3—4·1 in (105 mm)
Guns, AA 4—40 mm; 8—20 mm
Main engines 2 Krupp diesels
3 700 bhp; 2 shafts
Speed, knots 16
Radius, miles 9 400 at 11 knots
Oil fuel (tons) 336
Complement 364

Former German submarine school depot ship, built by Krupp-Germania and launched on 5 Apr 1934. Acquired from the US Navy in Oct 1947. Recommissioned in 1949 as a Ravitailleur-pour-Sousmarins (submarine Depot Ship). Alterations were made to the bridge and foremast in 1952. Formerly Flagship of the 3rd FER (3e flotille d'escorteurs rapides) or Groupe d'action anti-submarine (Anti-submarine Group). Now Flagship of the Fleet Training Centre.



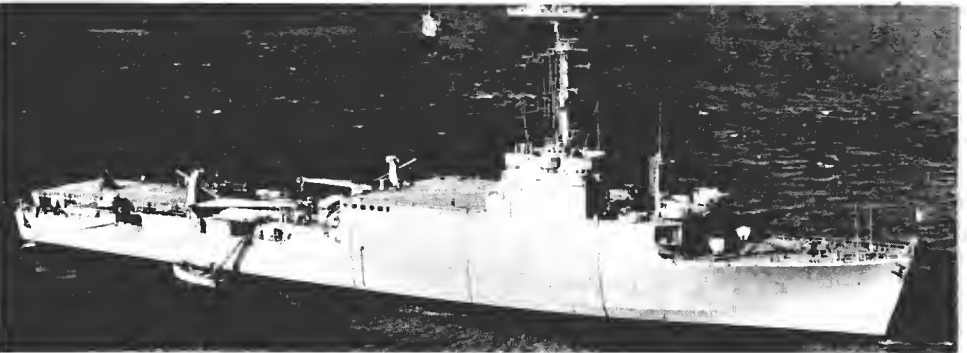
GUSTAVE ZÉDÉ 1966, French Navy, Official

ASSAULT LANDING SHIPS (Transports de chalands de débarquement)

ORAGE TCD 2 OURAGAN TCD 1

Displacement, tons 5 800 light; 8 500 full load; 15 000 when fully immersed
Length, feet (metres) 489 (149·0)
Beam, feet (metres) 70·5 (21·5)
Draught, feet (metres) 15 (4·6); 28·5 (8·7) max
Guns, surface 2—4·7 in (120 mm) mortars
Guns, AA 6—30 mm
Main engines 2 diesels; 8 000 bhp; 2 shafts
Speed, knots 17
Radius, miles 8 000 at 15 knots
Complement 341 (14 officers; 327 men)

Built at Brest Dockyard. *Ouragan* was laid down in June 1962, launched on 9 Nov 1963, completed for trials in 1964, and commissioned in Jan 1965. Bridge is on the starboard side. Fitted with a platform for three heavy helicopters. Able to carry EDICs loaded with eleven light tanks each, or 1B loaded LCMs, also 1 500 tons of material and equipment handled by two 35 tons cranes. Allocated to the Pacific Nuclear Experimental Centre, as *Orage* will be on completion in Mar 1968.



OURAGAN 1967 French Navy Official

OCEAN MINESWEEPERS

(Dragueurs Oceaniques)

15 U.S. MSO (ex-AM) Type
"Berneval" Class

ALENCON (ex-AM 453)
AUTUN (ex-AM 502)
BACCARAT (ex-AM 505)
BERLAIMONT (ex-AM 500)
BERNEVAL (ex-AM 450)
BIR HACHEM (ex-AM 451)
CANTHO (ex-AM 476)
COLMAR (ex-AM 514)

DOMPAIRE (ex-AM 454)
GARIGLIANO (ex-AM 452)
MYTHO (ex-AM 475)
NARVIK (ex-AM 512)
ORIGNY (ex-AM 501)
OUISTREHAM (ex-AM 513)
VINH LONG (ex-AM 477)

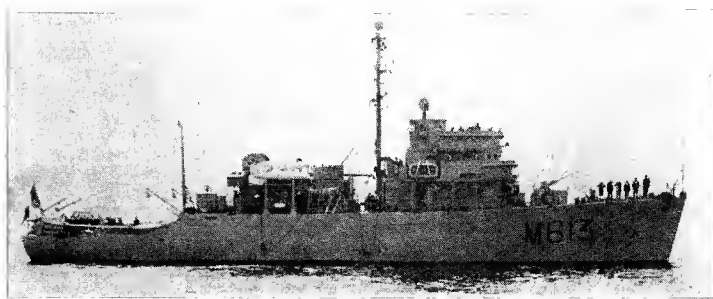
Displacement, tons 700 standard; 795 full load
Dimensions, feet 165 wl; 171 oa x 35 x 10.3
Guns 1—40 mm AA
Main engines 2 General Motors diesels; 2 shafts; 1 600 bhp = 13.5 knots designed; 14 knots on trials
Radius, miles 3 000 at 10 knots
Complement 54

The USA agreed in Sep 1952 to transfer to France eight new AM in 1953, and four more in 1954. Three more were transferred in 1956. *Bir Hacheim* was transferred in Feb 1954, *Garigliano* was transferred in Apr 1954 and *Vinh Long* in 1955. *Origny* was launched on 25 Feb 1955, *Autun* on 6 May 1955, *Baccarat* on 6 Aug 1955 and *Berlaumont* on 7 Jan 1955.

APPEARANCE. *Autun*, *Baccarat*, *Berlaumont*, *Colmar*, *Narvik*, *Origny* and *Ouistreham* are somewhat different from the others and have a taller funnel.

CLASS VARIATIONS. *Origny* is now classified and fitted as an oceanographic research vessel but is Navy owned and manned.

PHOTOGRAPHS. An aerial port quarter view of *Garigliano* appears in the 1955-56 edition, a broadside surface view of *Alencon* in the 1956-57 to 1958-59 editions, a starboard bow view of *Narvik* in the 1959-60 edition, a port broadside view of *Vinh Long* in the 1960-61 to 1963-64 editions, and a starboard quarter oblique aerial view of *Colmar* in the 1962-63 to 1966-67 editions.



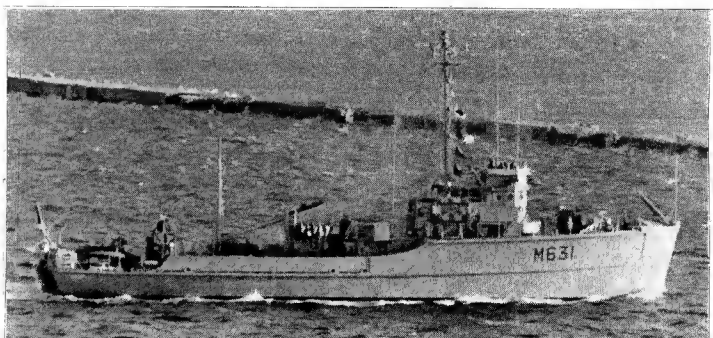
BERNEVAL (short funnel type)

1964, Stefan Terzibaschitsch



BERLAIMONT (tall funnel type)

1967, courtesy Admiral M. Adam



PAVOT (see bottom Col. 2)

1965, courtesy Dr Giorgio Arra

COASTAL MINESWEEPERS

(Dragueurs Côtiers)

34 British Type.
"Sirius" Class

ACHERNAR (12 Aug 54)
ALDEBARAN (27 June 53)
ALGOL (15 Apr 53)
ALTAR (27 Mar 56)
ANTARÈS (21 Jan 54)
ARCTURUS (12 Mar 54)
ARIES (13 Mar 56)
BELLATRIX (21 July 55)
BÉTELGEUSE (12 July 54)
CANOPUS (31 Dec 53)
CAPELLA (6 Sep 55)
CAPRICORNE (8 Aug 56)
CASSIOPEE (16 Nov 53)

CASTOR (19 Nov 53)
CENTAURE (8 Mar 55)
CÉPHÉE (3 Jan 56)
CROIX DU SUD (13 June 56)
DÉNÉBOLA (12 July 56)
ERIDAN (18 May 54)
ÉTOILE POLAIRE (5 Mar 57)
FOMALHAUT (24 Apr 55)
LYRE (3 May 56)
ORION (20 Nov 53)

PEGASE (21 June 55)
PERSÉE (23 May 55)
PHÉNIX (23 May 55)
POLLUX (16 July 54)
PROCYON (12 Dec 54)
RÉGULUS (18 Nov 52)
RIGEL (13 May 53)
SAGITTAIRE (12 Jan 55)
SIRIUS (6 Oct 52)
VEGA (14 Jan 53)
VERSEAU (26 Apr 56)

Displacement, tons 365 standard; 424 full load
Dimensions, feet 140 pp; 152 oa x 28 x 8.2
Guns 1—40 mm Bofors AA; 1—20 mm Oerlikon AA (several have 2—20 mm AA)
Main engines SIGMA free piston generators and Alsthom or Rateau-Bretagne gas turbines or SEMT-Pielstick 16-cyl fast diesels; 2 shafts; 2 000 bhp = 15 knots (11.5 knots when sweeping)
Oil fuel (tons) 48
Radius, miles 3 000 at 15 knots
Complement 38

Of wooden and aluminium alloy construction. Launch dates above. Of same general characteristics as the British "Coniston" class, but of different hull construction. Propelled by Alsthom or Rateau gas turbine with SIGMA free piston generator, except *Altair*, *Arcturus*, *Aries*, *Bételgeuse*, *Canopus*, *Capella*, *Capricorne*, *Céphée*, *Croix du Sud*, *Etoile Polaire*, *Lyre*, *Phénix* and *Verseau*, which have SEMT-Pielstick light diesels. Similar to those built in Great Britain and the Netherlands of which the plans were basically similar for all. The original design of this type of craft was developed in close collaboration with John I. Thornycroft & Co. Ltd, Southampton, and the Royal Navy. 16 of these vessels were built under the "off-shore" procurement programme. *Altair*, *Arcturus* and *Croix du Sud* have been station-ships in the West Indies since 1960. D 25, D 26 and D 27 were allocated to Yugoslavia.

PHOTOGRAPHS. A large starboard bow view of *Régulus* appears in the 1957-58 to 1959-60 editions, a starboard broadside view of *Vega* in the 1954-55 to 1963-64 editions, and a starboard bow near broadside surface view of *Altair* in the 1964-65 to 1966-67 editions.



ALDEBARAN

1967, French Navy, Official

30 U.S. MSC (Ex-AMS) Type. "Acacia" Class

ACACIA (ex-AMS 69)
ACANTHE (ex-AMS 70)
ACONIT (ex-AMS 66)
AJONC (ex-AMS 71)
AZELÉE (ex-AMS 67)
BEGONIA (ex-AMS 83)
BLEUËT (ex-AMS 116)
CAMÉLIA (ex-AMS 68)
CHRYSANTHEME (ex-AMS 113)
COQUELICOT (ex-AMS 84)
CYCLAMEN (ex-AMS 119)
ÉGLANTINE (ex-AMS 117)
GARDÉNIA (ex-AMS 114)
GIROFLÉE (ex-AMS 85)
GLAIEUL (ex-AMS 120)

GLYCINE (ex-AMS 118)
JACINTHE (ex-AMS 115)
LAURIER (ex-AMS 86)
LILAS (ex-AMS 93)
LISERON (ex-AMS 98)
LOBELIA (ex-AMS 96)
MAGNOLIA (ex-AMS 87)
MARGUERITE (ex-AMS 94)
MIMOSA (ex-AMS 99)
MUGUET (ex-AMS 97)
PAVOT (ex-AMS 124)
PERVENCHE (ex-AMS 141)
PIVOINE (ex-AMS 125)
RENONCULE (ex-AMS 142)
RÉSÉDA (ex-AMS 126)

Displacement, tons 370 standard; 405 full load
Dimensions, feet 136.2 pp; 141 oa x 26 x 8.3
Guns 2—20 mm AA
Main engines 2 General Motors diesels; 2 shafts; 1 200 bhp = 13 knots (8 knots when sweeping)
Oil fuel (tons) 40
Radius, miles 2 500 at 10 knots
Complement 38 (3 officers, 35 men)

The USA agreed in Sep 1952 to allocate to France in 1953, 36 new AMS (later re-designated MSC) under the Mutual Defense Assistance Programme, but only 30 were finally transferred to France in 1953-55. Three were returned to the USA after delivery to Saigon for Indo-China, and two of these were allocated to Japan (AMS 95 and 144). Three (AMS 139, 140, 143) were not delivered, having been allocated to Spain. Auxiliary motor minesweepers constructed throughout of wood or other materials with the lowest possible magnetic attraction to attain the greatest possible safety factor when sweeping for magnetic mines. All named after flowers. All built in the United States in 1951-54. *Acacia* was launched on 28 Mar 1953, *Aconit* on 27 Mar 1953, and *Azelée* on 9 June 1953.

PHOTOGRAPHS. A larger port broadside view of *Coquelicot* appears in the 1954-55 to 1959-60 editions, and a starboard view of *Pervenche* in the 1961-62 to 1964-65 editions.

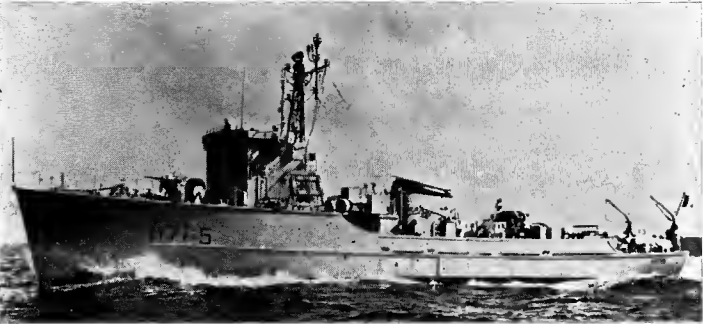
Coastal Minesweepers—continued

1 Special Type

MERCURE

Displacement, tons	333 light, 362 normal; 380 full load
Dimensions, feet	137.8 pp; 145.5 oa x 27 x 8.5
Guns	2—20 mm AA
Main engines	2 Mercedes-Benz diesels; 2 shafts; Kamewa variable pitch propellers, 4 000 bhp = 15 knots
Oil fuel (tons)	48
Radius, miles	3 000 at 15 knots
Complement	48

Ordered in France from Mécaniques de Normandie (who have built six sister ships for the Federal German Navy) under the "off-shore" programme. Laid down in Jan 1955. Launched on 21 Dec 1957. Completed in Dec 1958. Somewhat different from the 'Sirius' class and with the same method of construction as the United States-built 'Acacia' class. Stated to be a very successful model.



MERCURE courtesy M. Henri Le Masson

6 Ex-Canadian "Bay" Type
"La Dunkerquoise" Class

LA BAYONNAISE (ex- <i>Chignecto</i>)	LA LORIENTAISE (ex- <i>Miramachi</i>)
LE DIEPPOISE (ex- <i>Chaleur</i>)	LA MALOUINE (ex- <i>Cowichan</i>)
LA DUNKERQUOISE (ex- <i>Fundy</i>)	LA PAIMPOLAISE (ex- <i>Thunder</i>)
Displacement, tons	390 standard; 412 full load
Dimensions, feet	140 pp; 152 oa x 28 x 8.7
Guns	1—40 mm AA
Main engines	General Motors diesels; 2 shafts; 2 400 bhp = 16 knots max
Oil fuel (tons)	52
Radius, miles	4 500 at 11 knots
Complement	43 (4 officers, 39 men)

La Bayonnaise (launched 12 May 1952) *La Malouine* (launched 12 Nov 1951) and *La Paimpolaise* (launched 17 July 1953) were transferred to the French flag at Halifax on 1 Apr 1954. *La Dunkerquoise* (launched Apr 1953) on 30 Apr 1954, and *La Dieppoise* (launched 21 June 1952) and *La Lorientaise* (launched in 1953) on 10 Oct 1954. All similar to the 'Bay' class in the Royal Canadian Navy. *La Bayonnaise* and *La Dunkerquoise* left Brest in Apr 1961 for the Pacific to relieve *Lotus* and *Tiare* in New Caledonia and Tahiti, respectively. *La Dieppoise* is at Djibouti, *La Malouine* is at Diego Saurez, and *La Lorientaise* and *La Paimpolaise* are in New Caledonia and Tahiti, respectively. As these ships are used on 'colonial' service they have been air conditioned.



LA DUNKERQUOISE courtesy M. Henri Le Masson

DISPOSALS OF YMS TYPE COASTAL MINESWEEPERS
The seven remaining coastal minesweepers of the ex-US YMS type, latterly rated as *Batiments de Servitude* (service vessels), *Anémone*, *Asphodèle*, *Basile*, *Clemotite*, *Genêt*, *Héliotrope* and *Perce-Neige*, were all condemned by 1965, except *Asphodèle* and *Genêt*, it is officially stated. See full list of the transfers and disposals of this class in the 1962-63 edition.

DISPOSALS
Hussard (ex-PC 1235), the sole survivor of a numerically large class of former United States submarine chasers, was officially deleted from the list in 1965. *Dague* (ex-PC 1561) was scrapped in 1963. For disposals and transfers of this type, known in the French Navy as the 'Carabinier' Class, formerly rated as *Escorteurs*, but subsequently reclassified as *Patrouilleurs*, see the 1961-62 edition.

PATROL VESSELS (Escorteurs Cotiers)

14 "Le Fougueux" Class

L'ADROIT (6 Sep 1958)	L'ETOURDI (5 Feb 1958)
L'AGILE (26 June 1954)	LE FOUGUEUX (31 May 1954)
L'ALERTE (5 Oct 1957)	LE FRINGANT (6 Feb 1958)
L'ATENTIF (10 July 1958)	LE FRONDEUR (26 Feb 1959)

Patrol Vessels—continued

L'ARDENT (17 July 1958)	LE HARDI (17 Sep 1958)
L'EFFRONTÉ (27 Jan 1959)	L'INTRÉPIDE (12 Dec 1958)
L'ENJOUE (5 Oct 1957)	L'OPINIATRE (4 May 1954)
Displacement, tons	325 standard; 400 full load
Dimensions, feet	170 pp x 23 x 6.5
Guns	2—40 mm 80fors AA; 2—20 mm AA
A/S weapons	1 hedgehog; 4 DC mortars (and 2 DC racks); Sonar in <i>L'Agile</i> , <i>Le Fougueux</i> , <i>L'Opiniatre</i> ; others have a new 120 mm ASM mortar forward; 2 DCT; 1 DC rack
Tubes	<i>L'Intrépide</i> has a tube mounted on the stern
Main engines	4 SEMT-Pielstick light and fast diesel engines coupled 2 by 2; 3 240 bhp = 18.7 knots (22 knots on trial)
Radius, miles	3 000 at 12 knots; 2 000 at 15 knots
Complement	62 (4 officers, 58 men)

L'Agile, *Le Fougueux* and *L'Opiniatre* were built in France under a USA offshore order. Five more were built under the 1955 and six under the 1956 estimates. These have a different armament, slightly different appearance, and modified bridge. *Le Hardi* is employed on fishery protection duties in the North Sea, English Channel, Bristol Channel, off Shetland and Orkney Islands and Norway.

PHOTOGRAPHS. A photograph of *L'Opiniatre* appears in the 1958-59 and 1959-60 editions, and of *L'Adroit* in the 1960-61 to 1966-67 editions.

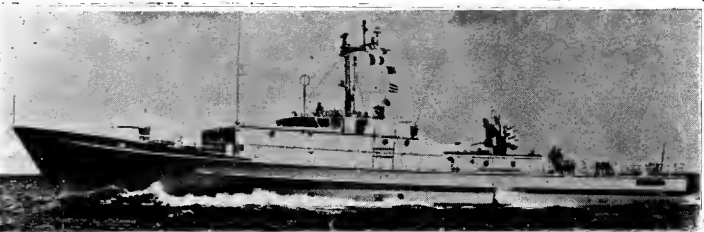


LE FOUGUEUX 1967, French Navy, Official

LA COMBATTANTE

Displacement, tons	182 standard; 201 full load
Dimensions, feet	147.8 x 24.2 x 6.5
Guns	1—40 mm AA
Guided weapons	1 rocket launcher for SS 11
Main engines	2 SEMT-Pielstick diesels; 2 shafts; variable pitch propellers; 3 200 bhp = 23 knots
Radius, miles	2 000 at 12 knots
Complement	25

Prototype of a new series of patrouilleurs garde-côtes or light patrol vessels. Authorised under the 1960 Programme. Built by Construction Mécaniques de Normandie. Laid down in Apr 1962, launched on 20 June 1963, and completed on 1 Mar 1964. Of wooden and plastic laminated non-magnetic construction.



LA COMBATTANTE 1964, French Navy, Official

PATROL LAUNCHES
(Chasseurs de Sousmarins)

2 Ex-U.S. SC Type

M 691 (ex-CH 101, ex-SC 524)	P 706 (ex-CH 135, ex-SC 1030)
Displacement, tons	110 standard; 138 full load
Dimensions, feet	107.5 wl; 110.6 oa x 18.8 x 6.5
Main engines	2 GM diesels; 2 shafts; 1 000 bhp = 15 knots

Of wooden construction. Launched in 1943. Acquired from the USN in 1944. Formerly rated as Submarine Chasers, but re-rated as patrol vessels in 1951. P 690, 691, 695, 696, 697, 711, 713, 714, 715 were converted into inshore minesweepers in 1954, but were discarded as such in 1958-59, although Nos. 690 and 691 still exist but as auxiliaries and not on the Navy list of fighting vessels.

DISPOSALS
P 731 was scrapped in 1956 and sister ship P 736 was given back to United States Navy in 1956. P 704 was scrapped in 1957 and P 701 was condemned in 1958. P 702 was scrapped in 1959. M 714 was withdrawn from active service on 1 Oct 1961 and M 711 on 1 Jan 1962. No. 732 was deleted from the list in Mar 1963. P 696, P 703 and P 713 were condemned in 1964. Nos. 690, 694, 709, 178, 722 and 724 are used as hulks or vedettes without armament for auxiliary purposes. M 691 is a buoyage vessel, P 706 is an accommodation vessel for diver teams (converted in 1959 and 1960).

TRANSFERS
P 699 was transferred to the Ivory Coast Republic and re-named *Patience* and P 700 was transferred to the Senegal Republic and re-named *Senegal*.

MAINTENANCE SHIPS

5 Logistic Support Type

LA GARONNE Repair Workshop (*Bâtiment de soutien logistique, version Atelier*)
LA LOIRE Minesweeper Support (*Bâtiment de soutien logistique, version Dragueurs*)
LA RANCE Damage Control (*Bâtiment de soutien logistique, version Sécurité*)
LE RHIN Electronic Service (*Bâtiment de soutien logistique, version Electronique*)
LE RHONE Submarine Depot (*Bâtiment de soutien logistique, version Sousmarins*)

Displacement, tons 2 075 standard; 2 375 full load; see notes
 Dimensions, feet 300 × 43 × 12 (*Garonne* 333 × 45 2 × 12 7)
 Guns 3—40 mm AA
 Aircraft 2 Alouette helicopters
 Landing craft 2 Personnel (LCP)
 Main engines 2 SEMT-Pielstick diesels; 1 shaft; 3 300 bhp = 16 knots
 Radius, miles 6 000 at 12 knots
 Complement 71 (5 officers, 66 men) plus *circa* 100 technicians, except *Garonne* 221 (10 officers, 211 men)

All these maintenance and logistic support ships have the same basic characteristics, hull and machinery, differing only in their respective specialisation, except *Garonne* which has one more deck, larger workshops and a heavier displacement of 2 320 tons standard, as a repair ship for the Pacific Nuclear Experimental Station (CEP), and *Le Rance*, radiological security ship (radioactive decontamination) with extended bridge and different silhouette and hangar for three helicopters. All were built by Lorient Dockyard. A photograph of *Le Rhin* appears in the 1963-64 to 1965-66 editions.

Name	Pennant No.	Programme	Laid down	Launched	Completed
<i>La Garonne</i>	A 617	1963	Nov 1963	8 Aug 1964	1 Sep 1965
<i>La Loire</i>	A 615	1962	July 1965	1 Oct 1966	1967
<i>La Rance</i>	A 618	1963	Aug 1964	15 May 1965	5 Feb 1966
<i>Le Rhin</i>	A 621	1959	May 1961	17 Mar 1962	1 Mar 1964
<i>Le Rhone</i>	A 622	1960	Feb 1962	8 Dec 1962	1 Dec 1964



LA GARONNE

1966, French Navy, Official

MAINE (ex-El Monsour) A 611

Displacement, tons 5 420
 Measurement, tons 5 818 gross; 1 320 deadweight
 Dimensions, feet 399 2 × 53 8 × 18
 Main engines 2 Parsons turbines; 2 shafts; 7 500 shp = 15 knots
 Boilers 2 (2 landed)
 Complement 115 (9 officers and 106 men)

MEDOC (ex-Sidi Ferruch) A 612

Displacement, tons 4 430
 Measurement, tons 3 988 gross
 Dimensions, feet 372 2 × 49 2 × 23
 Main engines 2 Rateau turbines; 2 shafts; 4 750 shp = 15 knots
 Boilers 2

MORVAN (ex-Sidi Mabrouk) A 613

Displacement, tons 4 090
 Measurement, tons 3 760 gross
 Dimensions, feet 371 8 × 51 × 23 8
 Main engines 2 Parsons turbines; 2 shafts; 4 600 shp = 15 knots
 Boilers 2

These three passenger vessels designed and built for Algeria by F. C. Medit (22 Oct 32) *Maine*, Bretagne/Loire (14 May 1949) *Medoc*, J. S. White (22 Apr 1948) were purchased in Sep 1963 and fitted out as barrack and accommodation ships for the maintenance of the Nuclear Establishment of Polynesie, the experimental base in the Pacific where they are manned by naval Personnel. A photograph of *Maine* appears in the 1965-66 edition.

MAURIENNE (ex-M/S Brazza) A 637

Displacement, tons 8 700 standard; 9 100 full load
 Measurement, tons 9 065 gross; 5 946 deadweight
 Dimensions, feet 480 00 × 62 × 22 3
 Main engines 2 Doxford diesels; 2 shafts; 8 800 bhp = 17 5 knots

Former motor passenger ship of the *Chargeurs Réunis* (West Africa Coast Service). Built by Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne. Launched on 14 Oct 1947. Completed in 1948. Purchased in Nov 1964. Converted at Brest in 1965 and admitted to active service on 8 Mar 1966 (left Brest the following day for the Pacific Nuclear Experimental Centre). Helicopter landing platform aft.



MAURIENNE

9 Mar 1966, courtesy Admiral M. Adam

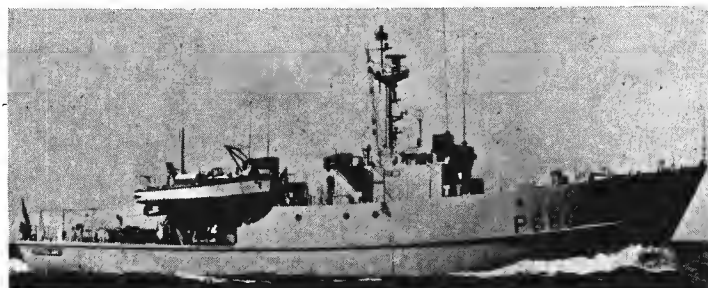
SURVEY SHIPS (Annexes Hydrographiques)

ASTROLABE A 780 (ex-P 681)

Displacement, tons 350 standard
 Dimensions, feet 137 8 × 27 × 8 2
 Guns 1—40 mm AA; 2 MG
 Main engines 2 Baudouin DV 8 diesels, 1 shaft; variable pitch propeller; 800 bhp = 13 knots max
 Radius, miles 4 000
 Complement 34 (3 officers, 31 men)

BOUSSOLE A 781 (ex-P 680)

Authorised under the 1961 Programme. Specially designed for the Hydrographic Service for surveys in tropical waters. Built by Chantiers de la Seine Maritime, Le Trait. Laid down in 1962, launched on 27 May and 11 Apr 1963 respectively, and commissioned in 1964.



ASTROLABE

1966, French Navy, Official

LA RECHERCHE (ex-Guyane) A 758 (ex-P 660)

Displacement, tons 780 standard; 1 047 full load
 Measurement, tons 965 gross
 Dimensions, feet 203 5 pp, 221 5 oa × 34 2 × 13
 Main engines 1 Werkspoor diesel; 1 535 bhp = 13 5 knots
 Complement 72 (5 officers and 67 men)

Former passenger motor vessel built by Chantiers Zeigler at Dunkirk. Launched on 17 Sep 1951. Purchased in 1960 and converted by Cherbourg Dockyard into a surveying ship. Commissioned into the French Navy in Mar 1961 and her name changed from *Guyane* to *Le Recherche*. To improve stability she was fitted with bulges.



LA RECHERCHE

1964, French Navy, Official

LA COQUILLE (ex-Atlantic Dolphin) A 678

Displacement, tons 120 approx
 Dimensions, feet Length 78
 Main engines 2 diesels; 1 shaft; variable pitch; 1 250 bhp = 9 knots
 Complement 11 men

Two small fishing trawlers purchased by the Navy and converted into surveying vessels of a new type by the Constructions Mécaniques de Normandie at Cherbourg to act as tenders to *La Recherche* (see above). Wooden hull and steel upperworks. *Alidade* was set afloat after conversion on 15 Nov 1962 and *Octant* on 20 Dec 1962. Commissioned in 1963.

ALIDADE (ex-Evelyne Marie) P 682

OCTANT (ex-Michel Marie) P 683

Displacement, tons 349
 Dimensions, feet 121 3 × 26 2
 Main engines Paxman diesel-electric; 1 shaft; speed 12 knots

Former British trawler. Built by J. S. Doig, Grimsby, in 1963. Purchased in May 1965 and converted by Cherbourg Dockyard as a survey and scientific research ship for the Pacific Nuclear Experimental Centre. There are two other large surveying vessels, *Beautemps-Beaupré* and *Le Pérouse*, see under frigates on earlier page.

DISPOSAL. The old survey ship of the frigate type, *Amiral Mouchez*, F 752, was decommissioned on 28 Oct 1964 and condemned in Sep 1965.

AMMUNITION SHIP

1 New Construction

ACHERON A 620

Displacement, tons 6 485 standard; 10 250 full load
 Dimensions, feet 482 2 × 70 5 × 21 3
 Main engines 2 SEMT-Pielstick diesels; 1 shaft; 11 500 bhp = 18 knots

Provided for under the 1961 Programme. Under construction at Brest Dockyard. To be launched in 1968 and completed in 1969.

TORPEDO RECOVERY CRAFT

PELICAN (ex-Kerfany)

PETREL (ex-Cap Lopez)

Measurement, tons 395 (*Pelican*); 263 (*Petrel*)

Purchased and converted from tuna clippers into torpedo recovery craft.

SEAWARD PATROL CRAFT

5 VC Type (*Vedettes de Surveillance Côtière*)

VC 1 P 751	VC 3 P 753	VC 7 P 757	VC 10 P 760
VC 2 P 752			
Displacement, tons	75 standard; 82 full load		
Dimensions, feet	104.2 × 15.5 × 5.5		
Guns	2—20 mm AA		
Main engines	2 Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots		
Radius, miles	1 500 at 15 knots		
Complement	15		

Seaward defence motor launches of new type. All completed in 1958 and 1959. Built by the Construction Mécaniques de Normandie, Cherbourg (VC 3, 7, 10), and Lürrsens in Germany (VC 1 and 2).

TRANSFERS

VC 11 (P 761) was sold to Tunisia, being handed over to the Tunisian Navy on 22 Sep 1959. VC 12 (P 762) was transferred to the Royal Moroccan Navy on 15 Nov 1960 and renamed *Es Sabiq*. VC 4 (P 754) was transferred to the Republic of the Congo on 16 Nov 1962. VC 5 (P 755) was transferred to the Senegal on 19 Jan 1963. VC 9 (P 759) was transferred to the Republic of the Côte d'Ivoire (Ivory Coast) in 1963. VC 8 (P 758) was transferred to Madagascar in 1963 and renamed *Mailaka*. VC 6 (P 756) was transferred to the Cameronian Republic on 7 Mar 1964.



VC 3

1967, French Navy, Official

DISPOSALS OF HDML TYPE

Of the 32 former British harbour defence motor launches, several were sunk by the enemy in Indo-China. Others were scrapped. VP 764 was discarded in 1957. VP 762 was loaned to the Royal Khmère Navy, VP 748 was transferred to the Royal Khmère Navy in 1956, and VP 749 and VP 765 later. VP 747 (ex-HDML 1423) was transferred to the Cameronian Republic in 1961 and VP 775 (ex-VP 25, ex-HDML 1021) was transferred to the Gaboon in 1961. The last survivor, VP 768 (ex-VP 6, ex-HDML 1228) was transferred to the Cameronian Republic in June 1962.

DISPOSALS OF US ML TYPE

Of the former motor launches of United States construction, VP 772 (ex-VP 51) was deleted from the list in 1964, and VP 773 (ex-VP 52) will be condemned.

FAIRMILE ML TYPE. *Oiseau des Isles*, P 780, former Fairmile motor launch, was seized by the Customs authority and allocated to the Navy for training "fighting swimmers".

INSHORE MINESWEEPERS

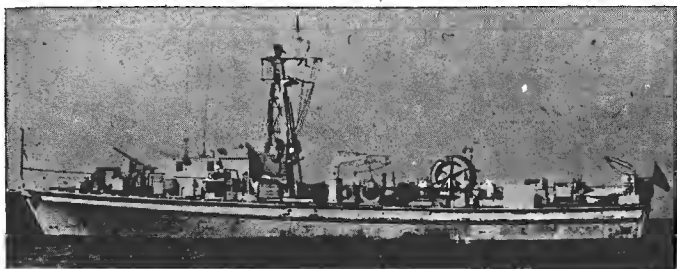
(*Dragueurs de Rade et d'Estuaire*)

15 British Type. "Ham" Class

ARMOISE (ex-Wexham)	M 772	JASMIN (ex-Stedham)	M 766
AUBEPINE (ex-Rendlesham)	M 781	JONQUILLE (ex-Sulham)	M 787
CAPUCINE (ex-Petersham)	M 782	MYOSOTIS (ex-Ripplingham)	M 788
DAHLIA (ex-Whippingham)	M 786	OEILLET (ex-Isham)	M 774
GERANIUM (ex-Tibenhams)	M 784	PAQUERETTE (ex-Kingham)	M 775
HIBISCUS (ex-Sparham)	M 785	PETUNIA (ex-Pineham)	M 789
HORTENSIA (ex-Mileham)	M 783	TULIPE (ex-Frettenham)	M 771
		VIOLETTE (ex-Mersham)	M 773

Displacement, tons	120 standard; 140 full load
Dimensions, feet	100 pp, 106.5 oa × 21.2 × 5.5
Guns	1—40 mm Bofors AA or 1—20 mm Oerlikon AA forward
Main engines	2 Paxman diesels; 550 bhp = 14 knots (9 knots when sweeping)
Oil fuel (tons)	15
Complement	12 (2 officers, 10 men)

Former British inshore minesweepers of the "Ham" class transferred to France under the American "off-shore" procurement program. First, M 771, was delivered in Dec 1954. Last, M 789 was handed over at Hythe on 10 Nov 1955.



VIOLETTE

1957, courtesy of M. Henri Le Masson

DISPOSALS OF SC TYPE

The eight remaining converted inshore minesweepers of the former patrol (*chasseur*) type, M 690, M 691, M 695, M 696, M 711, M 713, M 714 and M 715 were declassified or condemned in 1959, M 697 was condemned in 1958.

TRANSPORTS

ANJOU (ex-Leoville)

Displacement, tons	2 700
Measurement, tons	1 203 gross; 1 552 deadweight
Dimensions, feet	284.5 oa × 38 × 15
Main engines	2 MWM diesels coupled on one shaft; 2 400 bhp = 15 knots

Built by Roland Werft, Bremen, Launched on 10 Sep and 10 May 1958, respectively. Purchased in Jan 1966 and Oct 1964 from Cie. Worms for the Pacific experimental station, renamed in 1966 and 1964 and refitted in 1966 and 1965. Classed as refrigerated transports. For CEP (Centre Experimental Pacific).

AUNIS (ex-Regine Pacis)

Measurement, tons	1 250 gross
Main engines	2 4-str 8-cyl oil geared to 1 shaft; 2 000 bhp = 16.6 knots

Built by Roland Werft, Bremen. Launched on 3 July 1956. Purchased in Nov 1966 from Scotti, Ambrosino & Pugliese for Pacific Experimental Station.

LE LUTIN (ex-SS Clemenceau)

Purchased in 1965 and adapted for Pacific experiments.

VERDON (ex-Joste) A 634

Displacement, tons	6 500
Measurement, tons	3 100 gross; 4 275 deadweight
Dimensions, feet	344-B × 48.8 × 20
Main engines	1 8 & W 5-cyl diesel; 1 shaft

Former Norwegian motor ship. Built in 1952. Purchased in June 1964 by the Army white and light products carrier service but manned and commissioned by the Navy for CEP.

TARN (ex-Orgeval, ex-Colomb Bechar, ex-Marie Laetitia) A 771

Displacement, tons	2 660
Measurement, tons	2 392 gross; 3 748 deadweight
Dimensions, feet	330.8 × 47.5 × 19
Main engines	Reciprocating engine with exhaust turbine; 1 shaft; 1 900 shp = 12 knots
Boilers	2

Built by Ateliers et Chantiers de Bretagne at Nantes. Launched on 23 June 1951. Completed in 1952. Purchased in Apr 1965 from Beringuier Ltd. Converted in 1965-66 into a general purpose cargo ship, ammunition carrier, transport and store-ship and fitted out as a logistic support ship for the Pacific Centre (bâtiment magasin du CEP).

ARIEL Y 604

Displacement, tons	225 full load
Dimensions, feet	132.8 × 24.5 × 10.8
Main engines	MGO diesels; 2 shafts; 1 640 bhp = 16 knots

KORRIGAN Y 661

SYLPHE Y 710

Displacement, tons	171 standard; 189 full load
Dimensions, feet	126.5 × 22.7 × 8.2
Main engines	MGO diesel; 1 shaft; 600 bhp = 12 knots

Small transports for personnel, built by Chantiers Franco-Belge in 1959-60 (*Sylphe*) and 1963-64 (*Ariel* and *Korrigan*).

FALLERON (ex-German Welle) A 614

Displacement, tons	150; 247 full load
Main engines	Diesels; speed = 7 knots

Herault was removed from the effective list in 1955. *Alphée* became a station ship in 1958. *Ter* (ex-German *Heinrich*) was condemned in 1964.

GAPEAU (ex-German B 284, ex-V 625, ex-Johan Schultz) A 616

Displacement, tons	300
Main engines	Deutz diesels; 500 bhp = 9 knots

Photograph in 1957-58 and earlier editions. *Cep Ferrat* was stricken in 1960, and *Molène* (ex-German B 262, ex-V 620, ex-Köln) in Aug 1963.

TRÉBÉRON (ex-B 254) Y 712

Displacement, tons	120
Dimensions, feet	82 × 20 × 9
Main engines	Diesel; 120 bhp = 8.5 knots

Former German danlayer used as small personnel transport for local service. Rated as Patrol Craft. Sister ship *Rachgoun* was scrapped in 1957.

MELUSINE

MERLIN

Small transports for personnel being built in 1966 by Chantiers Navals Franco-Belges at Chalons sur Saône. Their home port will be Toulon.

SAINTONGE (ex-Santa Maria) A 733

Measurement, tons	294 gross; 500 deadweight
Dimensions, feet	177 × 28 × 10.5
Main engines	1 diesel; 1 shaft; 520 bhp = 9 knots

Built by Chantiers Duchesne et Bossière, Le Havre, for a Norwegian owner under the name of *Sven Germe*. Launched on 12 July 1956. Purchased in Apr 1965 from the firm of H. Beal & Co, Fort de France for the Pacific Nuclear Experimental Centre.

GUYENNE (ex-Douce France, ex-Sunfarer) A 735

Displacement, tons	375 light; 800 full load
Measurement, tons	300 gross; 580 deadweight
Dimensions, feet	177 × 27.5 × 11
Main engines	1 diesel; 1 shaft; 580 bhp = 10.5 knots

Built in 1954-55 by D. W. Kremer und Sohn, Elmshorn. Purchased in May 1965 from Cie Marseille Fret for the Pacific Experimental Station facilities.

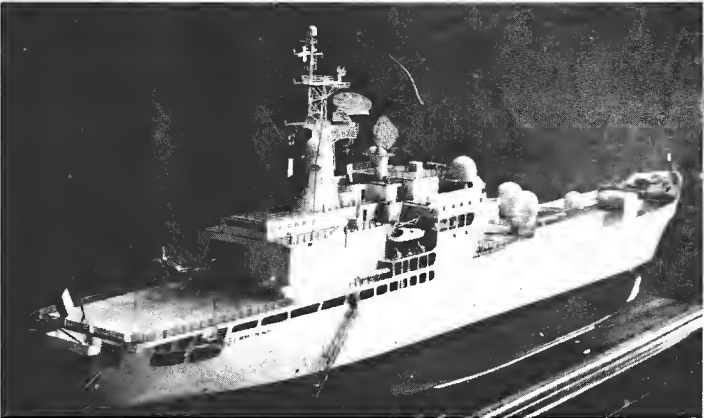
EXPERIMENTAL SHIP

(Bâtiment-Réceptacle d'Engines d'Experimentation)

HENRI POINCARE (ex-Maina Marasso) A 603

Displacement, tons	20 000 full load
Measurement, tons	12 885 gross
Dimensions, feet	565 x 74 x 31
Main engines	1 double reduction turbine; 1 shaft; speed = 15 knots
Boilers	2 high pressure water tube

Built by Cantieri Riuniti de Adriatico, Monfalcone. Launched in Oct 1960. Former Italian tanker. Purchased in Sep 1964. Arrived in Brest dockyard on 1 Oct 1964 to undergo conversion into a radar picket ship and guidance vessel for the experimental guided missile station in the Landes (SW France). The conversion to base observation ship is scheduled to be completed for re-commissioning in July 1967. Named after the mathematician and scientist



HENRI POINCARE 1967, French Navy, Official

LANDING SHIP DOCK

FOUDRE (ex-Greek Okeanos, ex-British Oceanway, ex-US LSD 12) A 646

Displacement, tons	4 500 standard; 7 930 full load
Dimensions, feet	457.8 oa x 72 x 18
Guns	1—4.1 in; 2—4.7 in mortars; 4—40 mm AA; 4—20 mm AA
Main engines	Turbine; 2 shafts; 7 400 hp = 17 knots
Boilers	2
Radius, miles	8 000 at 15 knots
Complement	212 (12 officers, 200 men)

Built by Newport News SB & DD Co. Launched on 29 Dec. 1943. Transferred by the United States to Great Britain in 1944. Acquired by Greece from whom she was purchased by the US in 1952 and transferred to France under MDAP.



FOUDRE 1966

DIVING TENDERS

(batiment de Recherches Sous Marines)

INGÉNIEUR ÉLIE MONNIER (ex-German trawler Albatros)

Displacement, tons	280 standard, 350 full load
Dimensions, feet	111.5 x 24 x 10
Main engines	Diesel; 1 shaft, Speed 12 knots
Range, miles	1 500
Complement	19

Former German trawler. Built by D. W. Kremer Schiffwert Elmshorn in 1944. Fitted for ocean research. Photograph in the 1957-58 to 1961-62 editions.

BELOUGA (ex-Cote d'Argent)

Tuna clipper purchased in 1966 for conversion into a diving tender.

RHINLOIRE

Displacement, tons	1 300
Dimensions, feet	213.2 x 39.4
Complement	43 plus 17 divers

Experimental and trials ships. To be equipped with a helicopter

TRITON

PORT DEPOT SHIPS

Former battleships, cruisers, etc, now obsolete, are classed as port depot ships:— There are the battleships Jean Bart at Toulon and Richelieu at Brest, the heavy cruiser Ocean (ex-Suffren) at Toulon, the light cruiser Montcalm at Toulon, all used as barracks; and the former aircraft carrier Bearn hulk at Toulon. Also the flotilla leaders (ex-light cruisers) Chateaurenault and Guichen, and a number of other ships including Voltigeur.

PATROL BOATS (Ex-Flotilla du Rhin)

1 Ex-U.S. LSD

P 9783	P 9784	P 9785	P 9786	P 9787	P 9788
Displacement, tons	45				
Dimensions, feet	79.3 x 14.8 x 4.2				
Guns	8—0.5 MG (four twin mountings)				
Main engines	2 Daimler-Benz diesels; 2 shafts; 1 000 bhp = 18 knots				

Built by Burmeister-Brême (P 9783, P 9784, P 9785) and Bodanwerft-Kressbronn. Completed in 1954.

DISPOSALS

The auxiliary patrol launch Rambervillers was deleted from the list in 1963. She was a war prize with the Ormont which was retired from service in Feb 1958. The former Rhine Flotilla support ships Hoche, L 981, Kleber, L 982, and Marceau, L 980, were officially deleted from the list in 1965. The former Rhine Flotilla patrol boats P 9781 and P 9782 (35 tons, duralumin hull), P 9796 (ex-41), P 9787 (ex-42) and P 9798 (ex-43), all 23 tons, P 9740, P 9741, P 9742 and P 9743 (12 tons, peralumin hull), P 9794 (10 tons, hydrofoil), and P 9790 and P 9791 (2 tons, fixed foils) were also officially deleted from the list in 1965, and P 9792 and P 9793 (6 tons, fixed foils) in 1966.

TRANSFERS

Nine control patrol launches of 10.2 tons, Y 6642-Y 6650, one river tug, and 9 landing craft (LCM) were transferred to the Bundeswehr in 1957-58.

FLOTILLA

There are also seven police vedettes of 6.3 tons (Y 6670, Y 6671, Y 6672, Y 6677, Y 6678, Y 6679, and Y 6681); 2 control patrol launches or 10.2 tons (Y 6640, Y 6641); six river tugs; and 31 landing craft (LCM).

ENCLUME A 790

Displacement, tons	350
Dimensions, feet	163.5 x 21.5 x 4.7
Main engines	3 MWM motors; 660 bhp = 10 knots

An old German LCM salvaged in 1952 and refitted. Repair ship, Les Voiges (ex-Washington, ex-Brunehilde), was transferred to the Bundeswehr in Dec 1957).

AMIRAL EXELMANS (ex-Germania) A 793

Displacement, tons	220
Dimensions, feet	130.7 x 21 x 4.5
Main engines	1 MAN diesel; 1 shaft; 230 bhp = 9.5 knots

Ex-river passenger boat built in 1927. Purchased in 1952. Used for training pilots.

TRAINING SHIPS

(Voiliers-École)

LA BELLE-POULE A 650

Displacement, tons	227
Dimensions, feet	12B oa x 23.7 x 11.8
Main engines	Sulzer diesel, 120 bhp = 6 knots

Auxiliary sail vessels. Built by Chantiers de Normandie (Fécamp) in 1932. Accommodation for 3 officers, 30 cadets, 5 petty officers, 12 men. Attached to Navy School.

GRANDE HERMINE (ex-Menestral)

Ex-fishing boat, built in 1936. Purchased in 1963 in replacement for Dolphin (ex-Simone Marcelle) as the School of Manoeuvre Training ship.

MUTIN A 652

A small coastal tender attached to l'École de pilotage (the School of Pilotage).

L'ÉTOILE A 649

WATER CARRIERS

GIBOULÉE A 741

HANAP (ex-Stjordels Fjord) A 740

Displacement, tons	450 light; 1 369 full load
Dimensions, feet	184 x 28.9 x 13.8
Main engines	Sulzer diesels; 1 000 bhp = 11.5 knots

Rated as regional supply ships. Crew 27. Arrosor was renamed Liamone in Mar 1954. Photograph of Liamone in 1957-58 edition.

RUMMEL A 635

Displacement, tons	630 light; 1 450 full load
Measurement, tons	650 deadweight
Dimensions, feet	176.2 x 29.5 x 14.5
Guns	2—20 mm AA
Main engines	2 diesels; 700 bhp = 12 knots

Sahel was completed in Aug 1951, Rummel in 1952 by Chantiers Naval de Caen. Photograph of Sahel in 1957-58 and earlier editions.

OASIS

Displacement, tons	335 standard; 683 full load
Displacement, feet	164.8 x 27 x 9
Guns	2—20 mm AA
Main engines	Triple expansion; 1 shaft; 800 ihp = 10 knots

Built by A. C. Bretagne. No. A 751. Sister Torrent was scrapped in 1964.

AVERSE
BRUINE

CATARACTE
DELUGE

FONTAINE
FOREMENE

MIRAGE

ONDEE

Small water carriers of various displacements (Cataracte 330 tons), Foremene carries fuel. Cascade, Durance and Fraiche were scrapped in 1957, Aube in 1958, Ardèche in 1960, Casamance and Zoghoun in 1963, Aiguade in 1964, Benzene in 1967.

LANDING SHIPS

BDC (Rated as *Bâtiments de Debarquement de Chars*)

ARGENS BDC 2

Displacement, tons
Dimensions, feet
Guns

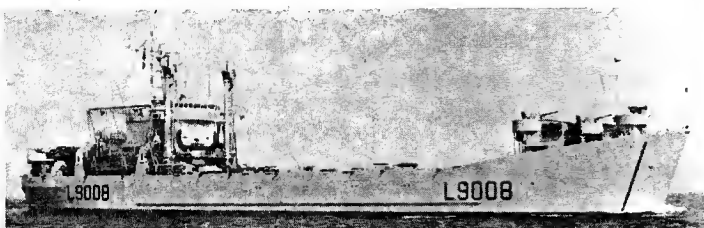
BIDASSOA BDC 5
BLAVET BDC 3

Main engines
Radius, miles
Complement

1 400 standard; 1 765 normal; 4 000 full load
328 oa × 50 × 14
2—40 mm AA; 2—40 mm AA (*Bidassoa, Blavet, Dives*,
1—4 7 in mortar); 3—40 mm AA
SEMT-Pielstick diesels; 2 shafts; 2 000 bhp = 11 knots
18 500 at 10 knots
85 (6 officers and 79 men). Plus 170 troops (normal)

DIVES BDC 4
TRIEUX BDC 1

Built by Chantiers Seine Maritime (*Bidassoa, Dives*) and Chantiers de Bretagne, Nantes (others). Launched on 7 Apr 1959, 30 Dec 1960, 15 Jan 1960, 29 June 1960 and 6 Dec 1958, respectively. All commissioned in 1960-61. Can carry: 4 LCV's, 1 800 tons of freight, 335 (up to 870 if required) troops (329 in bunks, 552 in hammocks). A photograph of *Trioux* appears in the 1960-61 to 1966-67 editions.



DIVES

1967, French Navy, Official

CHÉLIFF (ex-US LST 874)

ODET (ex-US LST 815)

Displacement, tons
Dimensions, feet
Main engines

1 625 standard; 4 030 full load
316 wl; 328 oa × 50 × 14 max
GM diesels; 2 shafts; 1 700 bhp = 11 knots

Former US tank landing ships, converted and used as transports. Scheduled to be withdrawn from active service in 1961, but restored to the Navy List in 1963.



ODET

1967, courtesy Dr Georgio Arra

LANDING CRAFT

6 + 1 EDIC (*Engins de Debarquement Infanterie Chars*)

EDIC 1 (7 Jan 1958)
EDIC 2 (21 Feb 1958)

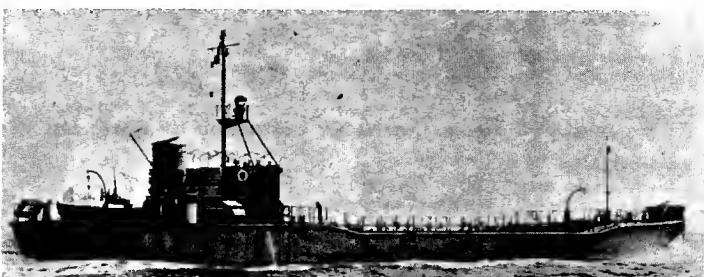
EDIC 3 (17 Apr 1958)
EDIC 4 (24 July 1958)

EDIC 5 (11 Apr 1958)
EDIC 6 (11 Oct 1958)
EDIC 7

Displacement, tons
Dimensions, feet
Guns
Main engines
Complement

292 standard; 642 full load
193 5 × 39 2 × 4 5
2—20 mm AA
MGO diesels; 2 shafts; 1 000 bhp = 8 knots
16 (1 officer, and 15 men)

EDIC 1 to 4 were built by C. N. Franco Belge. EDIC 5 and 6 by Toulon Dockyard. Launch dates above. All completed in 1958-59, Pennant Nos. L9091 to L 9096. A seventh EDIC was ordered from C. N. Franco Belges for delivery in Jan 1967.



EDIC 1

1967, French Navy, Official

4 EDA (*Engins de Debarquement Ateliers*)

Same hull and engine characteristics as the EDIC type, but equipped as repair ships. Built in 1964 and 1965. No names allocated.

ISSOLE L 9097

Displacement, tons
Dimensions, feet
Main engines

600 full load
160 8 × 23 × 7 2
2 diesels; 1 000 bhp = 12 knots

Built at Toulon in 1957-58. Coaster with bow doors and ramp. A photograph of *Issole* appears in the 1964-65 and 1965-66 editions.

LCT 9062

LCT 9098 (ex-LCT(4) 1274)

LCT 9099

Former British tank landing craft. LCT 9098 was purchased in 1963. LCT 9099 was fitted as a workshop on 1964.

LCT 9061 (ex-HMS *Buttress*, LCT(8) 4099)

Former British tank landing craft purchased in July 1965, see LCT(8)s, UK section.

BOOM DEFENCE VESSELS

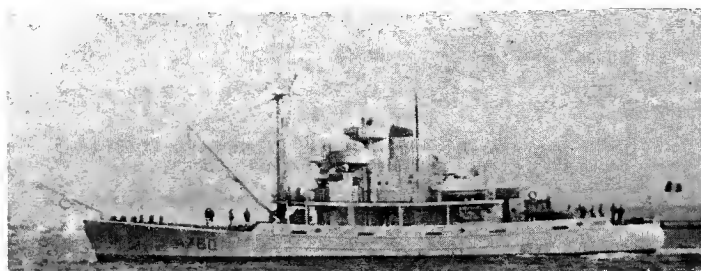
CIGALE (ex-AN 98)
CRIQUE (ex-AN 96)
FOURMI (ex-AN 97)
GRILLON (ex-AN 95)

SCARABÉE (ex-AN 94)

Displacement, tons
Dimensions, feet
Guns
Main engines

560 standard; 770 full load
149 3 × 33 5 × 10 5
1—40 mm Bofors; 4—20 mm AA
2, 4-stroke diesels, electric drive; 1 600 bhp = 12 knots

US AN type "Off-shore" orders. Sister ship *G 6* was allocated to Spain. *Crique* was launched on 3 June 1954, *Cigale* on 23 Sep 1954. *Fourmi* on 6 July 1954, *Grillon* on 18 Feb 1954 and *Scarabée* on 21 Nov 1953. Rated as Garbarres (Mouilleur de Filets). A photograph of *Crique* appears in the 1957-58 to 1964-65 editions.



CIGALE

1965, courtesy Admiral M. Adam

4 Ex-U.S. AN Type Netlayers

ARAIGNÉE (ex-Hackberry, ex-Maple)
LOCUSTE (ex-Locust)
SCORPION (ex-Yew)
TARENTOLE (ex-Pepperwood ex-Walnut)

Displacement, tons
Dimensions, feet
Guns
Main engines
Complement

560 standard; 850 full load
146 wl; 163 oa × 30 5 × 11 7
1—3 in AA; some MG
Diesel-electric; 800 hp = 12 knots
39

Launched on 6 Mar 1941, 1 Feb 1941, 25 Sep 1941 and 25 Aug 1941, respectively. *Locuste* was purchased in 1966. The three others were transferred in 1944.



ARAIGNÉE

1960 Giorgio Arra

2 Former Aircraft Tender Type

COMMANDANT ROBERT GIRAUD (ex-German *Immelmann*) A 755

Displacement, tons
Dimensions, feet
Guns
Main engines
Radius, miles
Complement

1 000 standard; 1 380 submerged
256 × 36 × 12
4 MAN diesels; 2 shafts; 8 800 bhp = 20 5 knots
4 000 at 18 knots; 7 800 at 12 knots
77 (6 officers and 71 men)

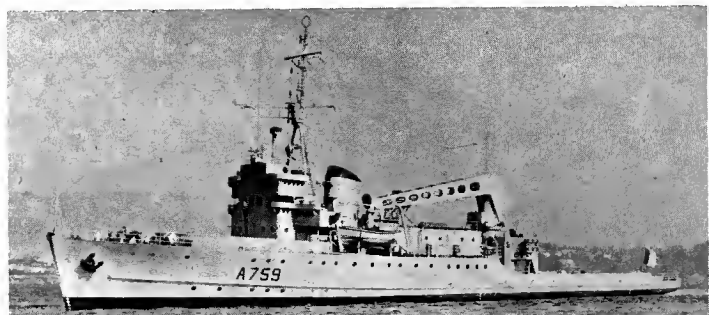
Former German aircraft tender. Built by Norderwerft, Hamburg. Launched in 1941. Completed in Dec 1941. Transferred by USA in Feb 1948. Re-rated *Escorteur de deuxième Classe* in 1953, *Aviso Escorteur* 1953, *Aviso* 1955, and *Gabarre* 1963. Armament removed. A photograph appears in the 1964-65 edition.

MARCEL LE BIHAN (ex-German *Giref*) A 759

Displacement, tons
Dimensions, feet
Guns
Main engines
Radius, miles
Complement

800 standard; 1 000 full load
236 2 × 34 8 × 10 5 max
4—20 mm AA
2 MAN diesels; 2 shafts; 4 400 bhp = 16 knots
2 000 at 13 knots
61 (5 officers and 56 men)

Former German aircraft tender. Built by Lubecker Fleudewerke. Launched in 1936. Completed in 1937. Transferred by USA in Feb 1948. Re-rated *Escorteur de Deuxième Classe* early 1953, *Aviso Escorteur* 11 Aug 1953, *Aviso* 1955 and *Gabarre* 1 Nov 1959, 4 1 in gun and 2—40 mm removed. Tender for bathysphere *Archimède*.



MARCEL LE BIHAN

1965, French Navy, Official

PATIENTE

PERSISTANTE

Patiente 450 tons. *Persistante* 350 tons. *Girafe* and *Persévérante* were scrapped in 1957, *Fidèle* in 1958, *Puissant* in 1960, *Agissante* in 1961, *Victorieuse* in 1964.

OILERS (Transports Petroliers)

LA CHARENTE (ex-Beaufort) A 626

Displacement, tons 7 084 light; 26 000 full load
Measurement, tons 12 373 gross; 18 800 deadweight
Dimensions, feet 587.2 × 72 × 30.3
Main engines 1 General Electric geared turbine
Boilers 2

Former Norwegian tanker built by Kaldnes Mek. Verksted Tønsberg, in 1957. Purchased by the French Navy in May 1965 and adapted for the Pacific Experimental Station.

ISERE (ex-La Mayenne, ex-Caltex-Strasbourg)

Displacement, tons 10 172 light
Measurement, tons 18 000 deadweight
Dimensions, feet 559 × 71.2 × 30.3
Main engines 1 single geared Parsons turbine; 8 260 shp = 16 knots
Boilers 2

Built by Seine Maritime. Launched on 22 June 1959. Former French tanker. Purchased late in 1964 for the Pacific Nuclear Experimental Centre.

LAC CHAMBON (ex-Anticline) A 629 LAC TONLÉ-SAP (ex-Pumper) A 630
LAC TCHAD (ex-Syncline) A 631

Displacement, tons 800 light; 2 670 full load
Dimensions, feet 235 × 37 × 15.8
Guns 3—20 mm AA
Main engines 2 Fairbanks-Morse diesels; 1 150 bhp = 11 knots
Radius, miles 6 300 at 11 knots
Complement 37

Ex-American fuel oil barges. Acquired in Dec 1944 and Mar 1945. *Lac Noir* was scrapped in 1951 *Lac Pavin* in 1953.

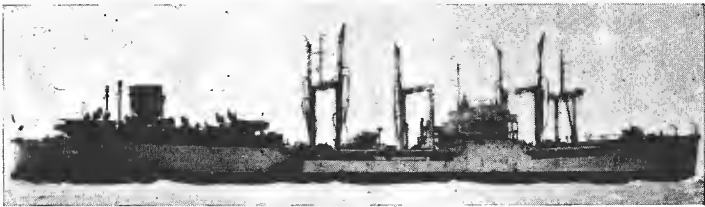


LAC TONLÉ SAP 1965, French Navy, Official

LA SAÛNE A 62B

Displacement, tons 7 350 light; 23 800 full load
Measurement, tons 16 870 deadweight
Dimensions, feet 525 × 72.5 × 33
Main engines Parsons geared turbines; 2 shafts; 15 800 shp = 17 knots
Boilers 3 Penhoët
Complement 200

Ordered as fleet tankers. After the war completed as merchant tankers. Returned to French Navy from charter company Sep 1953. *La Seine* was fitted as a fleet replenishment ship in 1961, *La Saône* in 1962. Now rated as Petroliers Ravitailleurs d'Escadre. They carry 11 500 tons of fuel, 300 tons of food, and have 75 000 l. tanks of wine. Photograph of *La Saône* in 1959-60 to 1961-62 editions.



LA SEINE 1962, French Navy, Official

ABER-WRAC'H (ex-CA 1) A 619

Displacement, tons 1 380 standard; 3 400 full load
Dimensions, feet 262.5 pp; 284 oa × 40 × 15.8
Guns 1—40 mm AA
Main engines 1 diesel; variable pitch propeller; 2 000 bhp = 12 knots
Radius, miles 5 000 at 12 knots
Complement 51 (2 officers and 49 men)

Built at Cherbourg. Authorised in 1956. Ordered in 1959. Laid down in 1961. The after part with engine room was launched on 24 Apr 1963. The fore part was built on the vacated slip, launched and welded to the after part. Complete hull floated up on 21 Nov 1963. Commissioned in 1964.

DISPOSALS
Of the three pétroliers ravitailleurs d'escadre of "La Baise" class, *La Charente* was scrapped in 1960, *La Mayenne* in 1961, and *La Baise* was deleted from the list in 1966.



ABER WRAC'H 1967, French Navy, Official

FLEET TUGS

CHATAIGNIER
MANGUIER

MARRONNIER
PALETUVIER

PAPAYER
NOYER

Being built at Cherbourg in 1967 for service at Brest (*Chataignier*, *Manguier*, *Papayer*) Toulon (*Marronnier*, *Noyer*) and Cherbourg (*Paletuvier*). 700 hp.

ACTIF
COURAGEUX

HERCULE
LABORIEUX

LUTTEUR
ROBUSTE

TRAVAILLEUR
VALEUREUX

Displacement, tons 230
Dimensions, feet 92 × 26 × 13
Main engines 1 MGO diesel; 1 050 bhp = 11 knots
Radius, miles 2 400 nautical
Complement 15

Courageux, *Hercule*, *Robuste* and *Valeureux* were completed in 1960 and the other four in 1962-63 at Le Havre, F. Ch. de la Méditerranée for service at Cherbourg (*Lutteur*), Toulon (*Actif* and *Travailleur*) and Brest (*Laborieux*).

HIPPOPOTAME (ex-Utrecht)

Measurement, tons 524 gross
Main engines Diesel-electric; 2 600 shp

Former Netherlands high sea tug. Built in 1943. Purchased by the French Navy in Jan 1964 to be used at the Experimental Base in the Pacific. Admitted to active service on 5 Mar 1964.

BELIER

PACHYDERME

Displacement, tons 900 standard; 1 185 and 1 115 full load, respectively
Main engines 2 000 ihp = 12 knots
Oil fuel (tons) 180
Radius, miles 3 000

A photograph of *Pachyderme* appears in the 1957-58 edition.

BUFFLE

Displacement, tons 900 standard; 1 180 full load
Dimensions, feet 167.5 × 33 × 10
Main engines 2 sets triple expansion; 2 000 ihp = 12 knots
Complement 32

Launched on 4 May 1939

ACHARNÉ

UTILE

Displacement, tons 500 to 682 full load
Dimensions, feet 114.8 × 27.8 × 10
Main engines Triple expansion; 1 000 ihp = 10 to 11 knots

Both laid down in 1937-38. *Acharné* by Brest, *Utile* by F. & C. de la Gironde, Bordeaux, *Actif*, *Applique* and *Capét* were scrapped in 1957-58. *Contentin* was withdrawn from service in 1960. *Champion* was condemned in 1961, *Obstiné* in 1965, *Entêté* and *Tetu* in 1966.

INFATIGABLE (ex-Polangen)

Displacement, tons 540
Main engines 1 200 ihp = 11 knots

IMPLACABLE (ex-Fohn II)

Displacement, tons 620
Main engines 1 600 ihp = 11 knots

DISPOSALS

Intratable (ex-Nordergrunde) was condemned in Mar 1961, and *Mammoth* in July 1963. *Imbattable* (ex-Nesserland) was officially deleted in 1965.

ÉLÉPHANT (ex-Bar)

Displacement, tons 850; 1 180 full load
Main engines 1 800 ihp = 12 knots

DISPOSAL

The tug *Samsø* (ex-German *Suder Hever*) was officially condemned Mar 1961.

RHINOCÉROS

Displacement, tons 700
Main engines Diesels; 1 850 bhp = 12 knots

A photograph of *Rhinocéros* appears in the 1953-54 to 1957-58 editions. Another tug of this type was purchased in 1964, it is officially stated.

ERABLE

Commissioned on 10 Oct 1965.

MALABAR (ex-YTB 458, ex-Evea)

Displacement, tons 300
Main engines Diesel; 1 020 bhp = 14 knots

Transferred from the US Navy in 1944. Sister *Coolie* was deleted in 1965.

TENACE (ex-ATA 226)

Displacement, tons 400
Main engines Diesels; 1 200 bhp = 10 knots

DISPOSALS. *Locmine* was condemned in 1964, and *Efficace* was officially deleted from the list in 1966.

HARBOUR TUGS. *Acajou*, *Balsa*, *Bouleau*, *Charme*, *Chêne*, *Cormier*, *Equeurdreville*, *Frêne*, *Hêtre*, *Hevea*, *Lotanier*, *Meleze*, *Merisier*, *Okoule*, *Olivier*, *Peuplier*, *Pin*, *Piatane* *Saule*, *Sycamore*.

GERMANY

Bundesmarine Administration

Chief of Naval Staff, Federal German Navy:
Vice-Admiral Karl Adolf Zenker

Commander-in-Chief of the Fleet:
Vice-Admiral Heinrich Gerlach

Diplomatic Representation

Naval Attaché in London:
Captain Ernst G. Kray

Naval Attaché in Washington:
Captain Helmut Schmoeckel

Future Naval Programme

Strength to be increased from 235 ships and 31 000 personnel in 1964 to 280 ships and 43 000 personnel by 1970.

Strength of the Fleet

- 13 Submarines (Diesel Powered)
- 10 Destroyers
- 11 Frigates
- 13 Escort and Support Ships
- 1 Training Ship (Cruiser Type)
- 7 Corvettes
- 24 Coastal Minesweepers
- 34 Fast Minesweepers
- 11 Inshore Minesweepers
- 47 Motor Torpedo Boats
- 23 Patrol Boats
- 3 Minelayers (ex-Landing Ships)
- 29 Landing Craft
- 100 Auxiliaries and Service Craft

New Construction

Guided missile ships planned include:
8 destroyers of about 4 000 tons,
10 so called "corvettes" of about 2 000 tons,
10 fast patrol boats of about 250 tons

Personnel

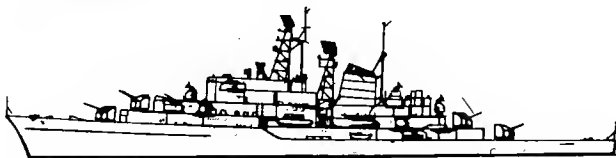
1961: 23,100 (2,100 officers, 21,000 men)
1962: 29,000 (2,636 officers, 26,364 men)
1963: 30,000 (2,800 officers, 27,200 men)
1964: 31,000 (3,000 officers, 28,000 men)
1965: 33,000 (3,000 officers, 30,000 men)
1966: 36,300 (3,200 officers, 33,100 men)
1967: 37,000 (3,360 officers, 33,640 men)

Mercantile Marine

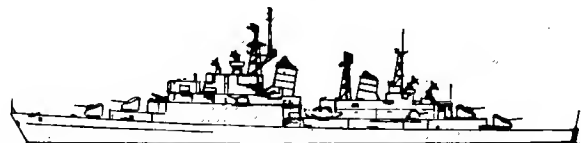
Lloyd's Register of Shipping:
2,609 vessels of 5,766,534 tons gross

Silhouettes

Scale: 150 feet = 1 inch



DEUTSCHLAND



HAMBURG Class



FLETCHER Class



SCHEER



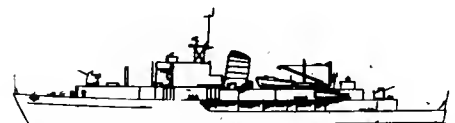
GNEISENAU



KÖLN Class



SCHARNHORST



LAHN, LECH

SUBMARINES

6 New Construction

Hunter-Killer Type

U 25 U 26 U 27 U 28 U 29 U 30

12+12 Coastal Type

U 13 U 15 U 17 U 19 U 21 U 23
U 14 U 16 U 18 U 20 U 22 U 24

NEW CONSTRUCTION. U 13-24 are reported to be of similar design to U 4-9.

U 1 (21 Oct 1961)	S 180	U 7 (30 May 1963)
U 2 (25 Jan 1962)	S 181	U 8 (11 Oct 1963)
U 3 (7 May 1962)	S 182	U 9 (29 Oct 1966)
U 4 (22 Aug 1962)	S 183	U 10
U 5 (22 Nov 1962)	S 184	U 11
U 6 (22 Apr 1963)	S 185	U 12

Displacement, tons	370 surface; 450 submerged
Length, feet (metres)	142.7 (43.5) oa
Beam, feet (metres)	15.1 (4.6)
Torpedo tubes	8 in bow
Main engines	2 MB diesels; total 1 200 bhp
	2 electric motors, total 1 700 bhp
Speed, knots	10 on surface; 17 submerged
Complement	21

All built by Howaldtswerke, Kiel in floating docks. Launch dates above. "Teardrop" hull. Fitted with schnorkel. First submarines designed and built by Germany since the end of the Second World War. U 3, lent to Norway on 10 July 1962 and temporarily named *Kobben* (S 310), was returned in 1964.

FRIEDRICH SCHÜREN

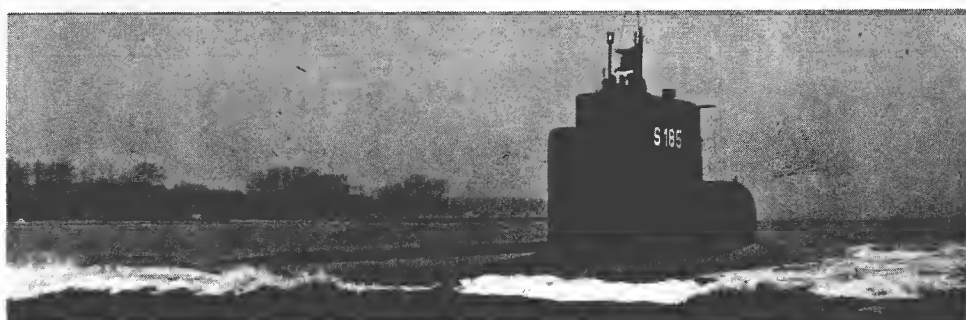
HANS TECHEL

EXPERIMENTAL MIDGET TYPE

The planned third unit of the midget type did not materialize. *Hans Techel* was launched on 15 Mar 1965 (trial Oct 1965) and *Friedrich Schüren* on 10 Nov 1965. Built by Atlas Werke, Bremen. Displacement: 100 tons surface, 150 tons submerged. Dimensions: 72 x 11 feet. Machinery: Diesels and electric motors, 350 hp = 13 knots surface and submerged. 2 torpedo tubes. Crew 6.

Displacement, tons	1 000
Torpedo tubes	For homing
Main engines	Diesels; Electric, motors
Complement	60

Construction of six ocean going hunter-killer U-boats displacing up to 1 000 tons was authorised on 9 Oct 1963 for delivery from German shipyards by 1967, but this schedule is not being implemented.



U 6

1966, Official

DESIGN IMPROVEMENT. U 4-12 were built to a heavier and improved design. U 1-3 modified accordingly. U 1 was completely reconstructed from late 1963 to 4 Mar 1965. U 9-12 have hulls of different steel alloys of

non-magnetic propensity. (See original appearance in the 1962-63 and 1963-64 editions). U 4-8 are sheathed with zinc.



HANS TECHEL

1967, courtesy Dr Giorgio Arra

Submarines—continued

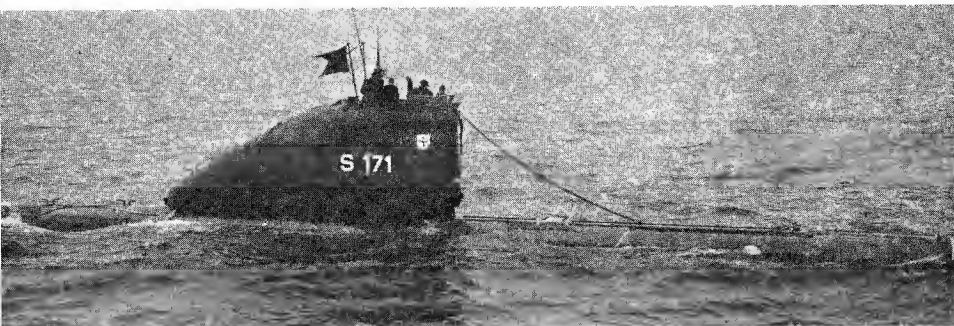
1 Converted Type XXI
WILHELM BAUER (ex-U 2540) Y 880
Displacement, tons 1 620 surface; 1 820 submerged
Length, feet (metres) 252.7 (77.0) pp
Beam, feet (metres) 21.7 (6.6)
Draught, feet (metres) 20.3 (6.2)
Torpedo tubes 4—21 in (533 mm) in bow
Main engines Diesel-electric drive
2 diesels total 4 200 bhp
2 electric motors total 5 000 hp
Speed, knots 15.5 surface; 17.5 submerged



WILHELM BAUER 1966, Stefan Terzibaschitsch

German Second World War Type XXI. Launched in 1944 by Blohm and Voss, Hamburg. Sunk on 3 May 1945. Raised in 1957. Rebuilt in 1958-59 at Howaldtswerke, Kiel, for commissioning on 1 Sep 1960. Used for experimental purposes on electronic equipment machinery and outfit in the *Erprobungsstelle für Marinewaffen* (Experimental Station for Naval Weapons). Conning tower has been modified.

Type XXIII
HECHT (ex-UW 21, ex-U 2367) 171
Displacement, tons 180 standard; 232 surface; 256 submerged
Length, feet (metres) 118 (36.0)
Beam, feet (metres) 10 (3.0)
Draught, feet (metres) 12 (3.7)
Torpedo tubes 2—21 in (533 mm) in bow
Main engines 580 bhp MWM diesel; 600 hp electric motor
Speed, knots 9.7 on surface; 12.5 submerged
Radius, miles 1 350 at 9 knots
Oil fuel (tons) 18
Complement 16



HECHT 1967, Official

German war type XXIII. Built in 1945 at Deutsche Werft, Hamburg. Raised in the Western Baltic in 1956, rebuilt at Howaldtswerke, Kiel in 1957. Used for ASW training and submarine crew training. Commissioned on 1 Oct 1957. In service in 1958.

RECONSTRUCTION. On 19 Oct, 1962 commenced third reconstruction being lengthened by about 2 m. Recommissioned on 1 Aug 1963.

LOSS. Sister ship *Hai* (Shark), S 170, ex-UW 20, ex-U 2365 was lost off the Dogger Bank on 14 Sep 1966 and although raised has not been rehabilitated.

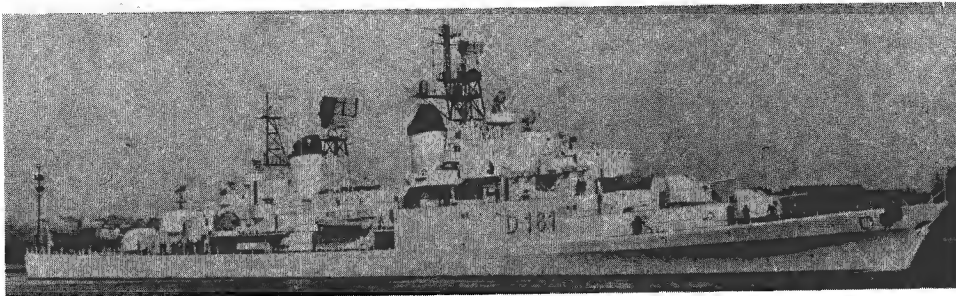
DESTROYERS

3+5 New Construction
Guided Missile Armed Type
"Charles F. Adams" Class
Displacement, tons 4 000 normal; 5 000 full load
Length, feet (metres) 431 (131.4) wl; 440 (134.1) oa
Beam, feet (metres) 47 (14.3)
Draught, feet (metres) 15 (4.6) mean; 20 (6.1) max
Aircraft Provision for helicopter
Missiles, AA "Tartar" launcher
Guns, dual purpose 2—5 in (127 mm) single mount, rapid fire
A/S "Asroc" launcher; 2 triple torpedo launchers; 1 DCT
Boilers 4
Main engines Geared steam turbines
70 000 shp; 2 shafts
Speed, knots 35
Complement 350

In 1964 it was decided that three "Charles F. Adams" class destroyers would be built in United States Shipyards and another five in West German shipyards. In 1965 the contract for the first three, assigned the US Navy numbers DDG 28, DDG 29 and DDG 30, was awarded to 8ath Iron Works Corp. Laid down 1 Mar 1966, 12 Apr 1966, 3 Apr 1967, launch 11 Aug 1967, 26 Aug 1967, 6 Apr 1968 for delivery 16 July 1968, 26 Nov 1968, 29 Apr 1969, respectively. Cost \$43 754 000.

4 "Hamburg" Class
Displacement, tons 3 340 standard; 4 330 full load
Length, feet (metres) 420 (128) wl; 439.7 (134.0) oa
Beam, feet (metres) 44 (13.4)
Draught, feet (metres) 17 (5.2)
Guns, dual purpose 4—3.9 in (100 mm)
Guns, AA 8—40 mm, 4 twin mounts
A/S 2 Bofors 4-barrel DC Mortars (rocket launchers)
Torpedo tubes 5—21 in (533 mm), 3 bow and 2 stern; 2 tubes for ASW torpedoes
Boilers 4 Wahodag; 910 psi (64 km/cm²), 860°F (460°C)
Main engines 2 Wahodag double reduction geared turbines; 68 000 shp; 2 shafts
Speed, knots 35.8 max; 18 economical sea
Radius, miles 920 at full power
Oil fuel, tons 674
Complement 282 (17 officers, 265 men)

Name	No.	Builders	Laid down	Launched	Completed
BAYERN	D 183	H. C. Stülcken Sohn, Hamburg	1962	14 Aug 1962	6 July 1965
HAMBURG	D 181	H. C. Stülcken Sohn, Hamburg	1959	26 Mar 1960	23 Mar 1964
HESSEN	D 184	H. C. Stülcken Sohn, Hamburg	1962	4 May 1963	1966
SCHLESWIG-HOLSTEIN	D 182	H. C. Stülcken Sohn, Hamburg	1959	20 Aug 1960	12 Oct 1964



HAMBURG 1967, Stefan Terzibaschitsch

Are named after countries of the German Federal Republic. Completion was retarded in order that recent technical developments could be incorporated in the design. *Bayern* and *Hessen* are slightly different from *Hamburg* and *Schleswig-Holstein*.

PHOTOGRAPHS of *Hamburg* appear in the 1963-64 to 1965-66 editions.



BAYERN 1966, Official

Destroyers—continued

Name	No.	Builders	Laid down	Launched	Completed	German commissioned
Z 1 (ex-USS <i>Anthony</i> , DD 515)	D 170	Bath Iron Works Corporation, Maine	17 Aug 1942	20 Dec 1942	26 Feb 1943	17 Jan 1958
Z 2 (ex-USS <i>Ringgold</i> , DD 500)	D 171	Federal SB & DD Co, Port Newark	25 June 1942	11 Nov 1942	24 Dec 1942	14 July 1959
Z 3 (ex-USS <i>Wadsworth</i> , DD 516)	D 172	Bath Iron Works Corporation, Maine	18 Aug 1942	10 Jan 1943	16 Mar 1943	6 Oct 1959
Z 4 (ex-USS <i>Claxton</i> , DD 571)	D 178	Consolidated Steel Corporation, Orange	25 June 1941	1 Apr 1942	8 Dec 1942	15 Dec 1959
Z 5 (ex-USS <i>Dyson</i> , DD 572)	D 179	Consolidated Steel Corporation, Orange	25 June 1941	15 Apr 1942	30 Dec 1942	23 Feb 1960
Z 6 (ex-USS <i>Charles Ausburn</i> , DD 570)	D 180	Consolidated Steel Corporation, Orange	14 May 1941	16 Mar 1942	24 Nov 1942	12 Apr 1960

6 Ex-U.S. "Fletcher" Class

Displacement, tons	2 100 standard; 2 750 full load
Length, feet (metres)	368.4 (112.3)wl; 376.5 (114.8)oa
Beam, feet (metres)	39.5 (12)
Draught, feet (metres)	18 (5.5) max
Guns, dual purpose	4—5 in (127 mm) 38 cal.
Guns, AA	6—3 in (76 mm) 50 cal., 3 twin mountings
A/S	2 hedgehogs; 1 DC rack
Torpedo tubes	5—21 in (533 mm), quintuple bank; 2 ASW tubes
Boilers	No tubes in Z6
Main engines	4 Babcock & Wilcox; 569 psi (40 kg/cm ²); 851°F (455°C)
Speed, knots	2 sets GE geared turbines
Radius, miles	60 000 shp; 2 shafts
Oil fuel (tons)	34 max; 17 economical sea speed
Complement	6 000 at 15 knots
	650
	280



ZERSTÖRER 6

1967, Skyfotos

Former American "Fletcher" class destroyers. On loan from the United States for five years. *Anthony*, now Z 1 (NATO Pennant No. D 170) arrived at Bremerhaven on 14 Apr 1958. *Ringgold* was transferred by the USA at Charleston, S.C., on 14 July 1959.



Z 3

1967, courtesy Godfrey H. Walker, Esq

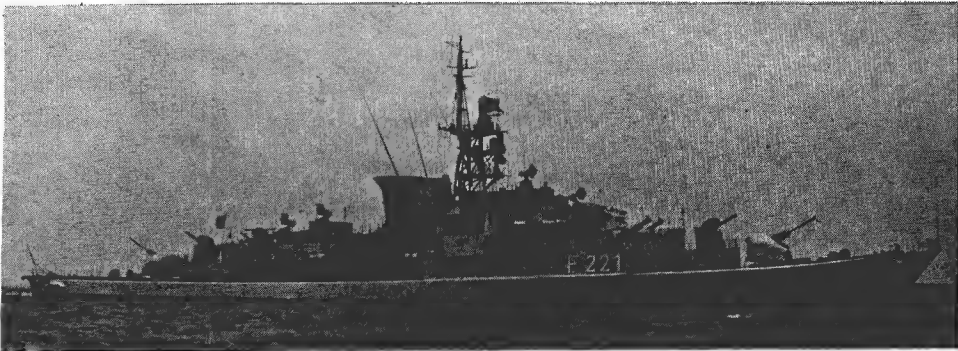
PHOTOGRAPHS. A starboard broadside surface view of Z 1 appears in the 1958-59 to 1961-62 editions, a similar photograph of Z 5, a dead broadside view showing radar fitted on after funnel, in the 1962-63 edition, and a silhouette view of Z 5 in the 1963-64 to 1966-67 editions.

6 "Koln" Class

FAST FRIGATES

Name	No.	Builders	Launched	Completed
AUGSBURG	F 222	H. C. Stülcken Sohn, Hamburg	15 Aug 1959	7 Apr 1962
BRAUNSCHWEIG	F 225	H. C. Stülcken Sohn, Hamburg	3 Feb 1962	16 June 1964
EMDEN	F 221	H. C. Stülcken Sohn, Hamburg	21 Mar 1959	24 Oct 1961
KARLSRUHE	F 223	H. C. Stülcken Sohn, Hamburg	24 Oct 1959	15 Dec 1962
KÖLN	F 220	H. C. Stülcken Sohn, Hamburg	6 Dec 1958	15 Apr 1961
LUBECK	F 224	H. C. Stülcken Sohn, Hamburg	23 July 1960	6 July 1963

Displacement, tons	2 100 standard; 2 550 full load
Length, feet (metres)	360.9 (110)
Beam, feet (metres)	36.1 (11.0)
Draught, feet (metres)	11.2 (3.4)
Guns, dual purpose	2—3.9 in (100 mm)
Guns, AA	6—40 mm; 2 twin and 2 single
A/S	2 Bofors 4-barrel DC mortars (rocket launchers)
Torpedo tubes	2 for ASW torpedoes
Main engines	Combined diesel and gas turbine plant: 4 MAN 16-cyl. diesels, total 12 000 bhp; 2 Brown-Boveri gas turbines, 26 000 bhp
Speed, knots	38 000 shp; 2 shafts
Radius, miles	30 max; 23 economical sea speed; official revised figures
Oil fuel, tons	920 at full power
Complement	333
	210



EMDEN

1966, Bundesmarine, Official

A new type of fast anti-submarine frigates or escort destroyers. All built by H. C. Stülcken Sohn, Hamburg. Ordered in Mar 1957. All ships of this class are named after towns of West Germany. Classed as *Gefleitboote*.



KARLSRUHE

1967, Official

ENGINEERING. Each of the two shafts is driven by two diesels coupled and geared to one BBC gas turbine. Variable pitch propellers.

PHOTOGRAPH of *Augsburg* appears in the 1965-66 edition, and of *Köln* in the 1962-63 to 1966-67 editions,

FRIGATES (ex-Escort Destroyers)

Name	No.
BROMMY (ex-HMS Eggesford)	F 218
RAULE (ex-HMS Albrighton)	F 217

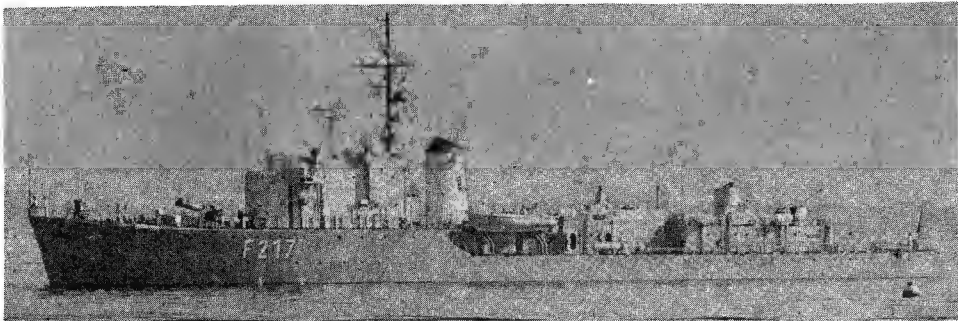
Builders
J. Samuel White & Co, Ltd, Cowes
John Brown & Co, Ltd, Clydebank

Laid down	Launched	Completed
23 June 1941	12 Sep 1942	21 Jan 1943
30 Dec 1940	11 Oct 1941	22 Feb 1942

2 British "Hunt" Class, Type 111

Displacement, tons	1 087 standard; 1 620 full load
Length, feet (metres)	264.2 (80.5) pp; 280 (85.3) oa
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	14 (4.3) max
Guns, AA	1—40 mm
A/S	2 four-barrel DC mortars; 2 torpedo launchers
Boilers	2 Admiralty 3 drum; 300 psi (21 km/cm ²); 662°F (350°C)
Main engines	2 Parsons double reduction geared turbines; 19 000 shp 2 shafts
Speed, knots	26 max, 13 economical sea
Radius, miles	3 600 at 14 knots
Oil fuel (tons)	345
Complement	170

Former British frigates (ex-escort destroyers) of the "Albington" class ("Hunt" class, Type III). Reconstructed in 1958-59 and transferred from Great Britain to the Bundesmarine, commissioning on 14 May 1959. Rated as training ships for the submarine weapons school. Both modified in 1961. *Brommy* was annually refitted



RAULE (as modified)

1967, courtesy Dr Giorgio Arra

by Palmers Hebburn works of Vickers-Armstrongs in 1962, 1963, and 1964. *Raule* was modified by Howaldts- werke, Hamburg, 1962-64. *Brommy* will become an experimental ship for the Bundesamt für Wehrtechnik und Beschaffung.

PHOTOGRAPH of *Brommy* appears in the 1962-63 edition.

Name	No.
GNEISENAU (ex-HMS Oakley, ex-Tickham)	F 212

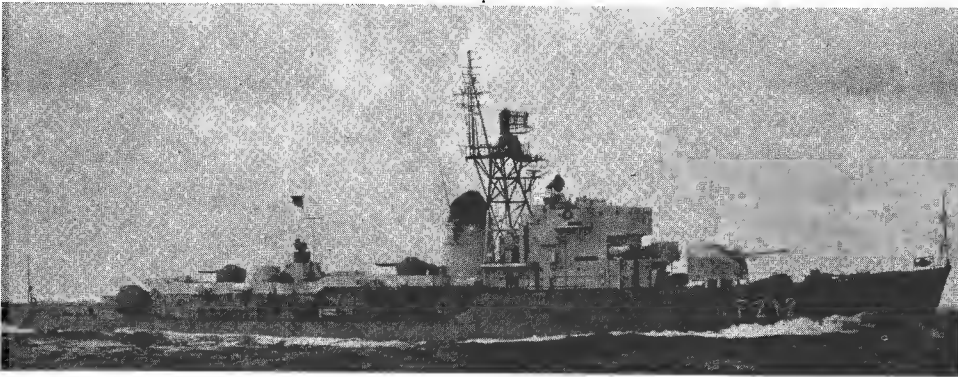
Builders
Yarrow & Co Ltd, Scotstoun, Glasgow

Laid down	Launched	Completed
19 Aug 1940	15 Jan 1942	7 May 1942

1 British "Hunt" Class, Type II

Displacement, tons	1 050 standard; 1 610 full load
Length, feet (metres)	264.2 (80.5) pp; 280 (85.3) oa
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	14 (4.3)
Guns, dual purpose	1—3.9 in (100 mm)
Guns, AA	4—40 mm
Boilers	2 Admiralty 3-drum; 299 psi (21 km/cm ²); 660°F (350°C)
Main engines	2 Parsons double reduction geared turbines; 19 000 shp; 2 shafts
Speed, knots	25.5 max, 12 economical sea speed
Radius, miles	3 600 at 14 knots
Oil fuel (tons)	345
Complement	130

Former British frigate (ex-escort destroyer) of the "Blankney" class ("Hunt" class, Type II). Purchased in Nov 1957. Officially taken over after refit in Great Britain, at Langton Branch Dock, Harland & Wolff Ltd, Liverpool, 2 Oct 1958. Commissioned and renamed at Bremerhaven on 18 Oct 1958. Fitted with stabiliser, radar and cowl funnel. Employed as a training ship by the Gunnery School. Modified in 1961. Anti-Submarine weapons removed. Underwent further reconstruction by Howaldtswerke, Hamburg, in 1962-64.



GNEISENAU

1967, Official

FRIGATES (ex-Sloops)

Name	No.
SCHARNHORST (ex-HMS Mermaid)	F 213
SCHEER (ex-HMS Hart)	F 216

Builders
Wm Denny & Bros Ltd, Dumbarton
Alex Stephen & Sons Ltd, Govan, Glasgow

Laid down	Launched	Completed
8 Sep 1942	11 Nov 1943	12 May 1944
27 Mar 1942	7 July 1943	12 Dec 1943

2 Ex-British "Black Swan" Class

Displacement, tons	1 490 standard; 1 975 full load
Length, feet (metres)	283 (86.3) pp; 300 (91.44) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	11.5 (3.5) mean
Guns, dual purpose	2—3.9 in (100 mm) <i>Scharnhorst</i>
Guns, AA	4—40 mm
A/S	1 DCT; 1 DC rack; 40 DC
Boilers	2 Admiralty 3-drum; 250 psi (17.5 km/cm ²); 400°F (205°C)
Main engines	2 Parsons double reduction geared turbines; 4 300 shp; 2 shafts
Speed, knots	18
Radius, miles	4 500 at 12 knots
Oil fuel (tons)	370
Complement	180

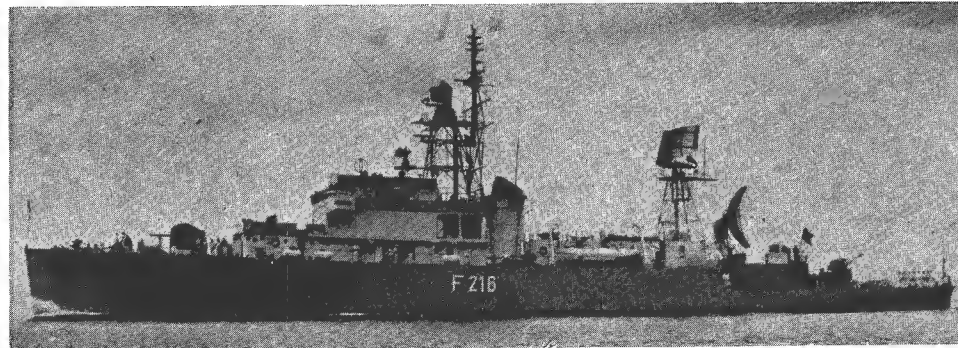
Former British frigates (ex-sloops) of the Modified "Black Swan" class.

TRANSFER. *Scheer* was handed over at Palmers, Jarrow, on 27 April 1959, and *Scharnhorst* at Vickers-Armstrongs, Tyne, on 5 May 1959.

TRAINING. *Scharnhorst* is employed for gunnery training and *Scheer* for radar.

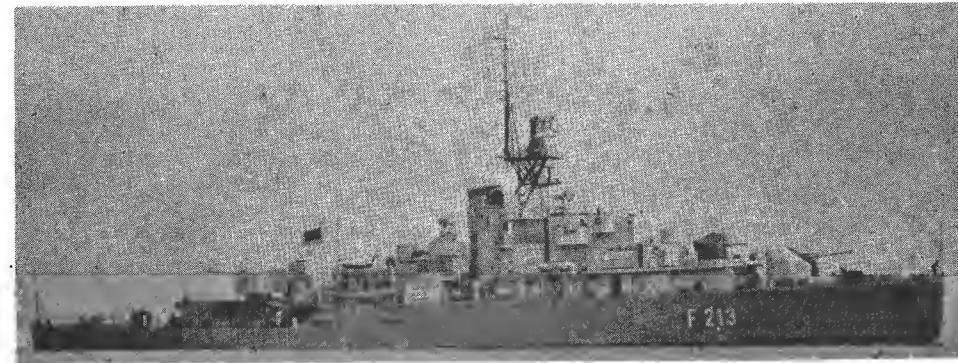
CONVERSION. *Scharnhorst* was converted by Stülcken Sohn, Hamburg, from June 1961 to July 1962, with French type 100 mm guns (her former armament was 6—4 inch AA, 2—40 mm AA). *Scheer* was converted by Seebeck from Sep 1961 to Nov 1962 into a radar picket training ship.

DISPOSALS
Of this class *Graf Spee* (ex-HMS *Flamingo*), F 215, and *Hipper* (ex-HMS *Actaeon*), F 214 were officially stricken from the active list on 31 July 1964. They will be reconstructed as Air/Sea Rescue Ships (*Flugsicherheits-schiffe*).



SCHEER

1964, courtesy Mr Michael D. J. Lennon



SCHARNHORST

1964, Stefan Terzibaschitsch

ESCORT AND SUPPORT SHIPS

13 "Rhein" Class

DONAU 69	LAHN 55	MOSEL 67	SAAR 65
ELBE 61	LECH 56	NECKAR 66	WERRA 68
ISAR 64	MAIN 63	RHEIN 58	WESER 62
RUHR 64			

Displacement, tons	2 370 standard; 2 540 full load except <i>Lahn</i> and <i>Lech</i> 2 460 standard; 2 680 full load
Length, feet (metres)	304.5 (92.8) wl; 323.5 (98.6) oa
Beam, feet (metres)	38.8 (11.8)
Draught, feet (metres)	11.2 (3.4)
Guns, AA	2—3.9 in (100 mm); none in <i>Lahn</i> , <i>Lech</i> ; 4—40 mm
Main engines	6 Maybach or Daimler diesels; Diesel-electric drive in <i>Isar</i> , <i>Lahn</i> , <i>Lech</i> , <i>Mosel</i> , <i>Saar</i> 11 400 bhp; 2 shafts
Speed, knots	21.7 max, 15 economical sea speed
Radius, miles	1 625 at 15 knots
Oil fuel, tons	334
Complement	110 (accommodation for 200)



RUHR

1967, Skyfotos



LAHN

1967, Stefan Terzibaschitsch

Elbe, *Mosel*, *Rhein*, and *Ruhr* were built by Schliekerwerft, Hamburg, *Isar* by Blohn & Voss, Hamburg, *Weser* by Elsflither Werft, *Neckar* by Lürssen, Bremen-Vegesack, *Saar* by Norderwerft, Hamburg, *Donau* by Schlichting, Travemünde, *Lahn* and *Lech* by Flender, Lübeck, *Main*, *Werra* by Lindenu, Kiel-Friedrichsort. All completed in 1961-64. Rated as *Belgleitschiffe* (tenders) for mine sweepers (*Isar*, *Mosel*, *Saar*), submarines (*Lahn*, *Lech*), training (*Donau*, *Ruhr*, *Weser*), and motor torpedo boats (others) but these handsome and symmetrical ships of very interesting design, with their 3.9 in (100 mm) guns and comparatively high speed could obviously be used in lieu of frigates, although their flag superior is A.

PHOTOGRAPHS of *Rhein* appear in the 1962-63 editions, and of *Weser* in the 1963-64 edition.



ELBE

1964, Wright & Logan

TRAINING SHIP

1 Light Cruiser Type

Displacement, tons	4 800 normal; 5 500 full load
Length, feet (metres)	452.8 (138.0) pp; 475.8 (145.0) oa
Beam, feet (metres)	59 (18.0)
Draught, feet (metres)	14.8 (4.5)
Aircraft	1 helicopter
A/S	2 Bofors 4-barrel rocket launchers
Guns, dual purpose	4—3.9 in (100 mm) single mounts
Guns, AA	6—40 mm; 2 twin and 2 single
Torpedo tubes	4 for A/S torpedoes; 2 for surface torpedoes

Name	No.	Builders	Laid down	Launched	Completed
DEUTSCHLAND	A 59	Nobiskrug, Rendsburg	1959	5 Nov 1960	25 May 1963
Main engines	6 680 bhp diesels (2 Daimler-Benz and 2 Maybach); 2 shafts 8 000 shp double reduction MAN geared turbines; 1 shaft				
Boilers	2 Wahodag; 768 psi (54 km/cm ²); 870°F (465°C)				
Speed, knots	21.9 max (3 shafts); 17 (2 shafts) 14 economical sea (1 shaft)				
Radius, miles	1 715 at 17 knots				
Oil fuel, tons	230 furnace; 411 diesel				
Complement	334 (29 officers, 305 men) plus 231 cadets.				

First West German naval ship to exceed the post-war limit of 3 000 tons. Large frigate or light cruiser type. Can also be employed as a minelayer. Designed with armament and machinery of different types for training purposes. The name originally planned for this ship was *Berlin*. Ordered in 1956. Carried out her first machinery sea trials on 15 Jan 1963.



DEUTSCHLAND

1967, Skyfotos

CORVETTES
10 Projected

Table with 2 columns: Attribute, Value. Attributes include Displacement, Guided weapons, Tubes, Main Engines.

Projected under the new construction programme. Although designated "corvettes" they more nearly approximate to frigates in size and design.

HANS BÜRKNER Y 879

Table with 2 columns: Attribute, Value. Attributes include Displacement, Dimensions, Guns, Tubes, A/S weapons, Main Engines, Complement.

Large PCE type. Rated as Type 8 Torpedofangboote. Built by Atlaswerke, Bremen. Launched on 16 July 1961. Completed on 18 May 1963. Named after the designer of the German pre-First World War battleships



HANS BÜRKNER 1964. Bundesmarine, Official

5 "Thetis" Class

Table with 5 columns: Ship Name, Displacement, Dimensions, Guns, A/S weapons, Main engines, Complement. Columns include HERMES, NAJADE, THESEUS, THETIS, and TRITON.

Built by Roland Werft, Bremen-Hemelingen. Some have a computer house before the bridge structure. Thetis commissioned on 1 July 1961, Hermes on 16 Dec 1961, Najade on 12 May 1962, Triton on 10 Nov 1962, and Theseus on 15 Aug 1963. These Torpedofangboote of advanced type would be used as submarine chasers in wartime. They are provided with a helicopter deck.

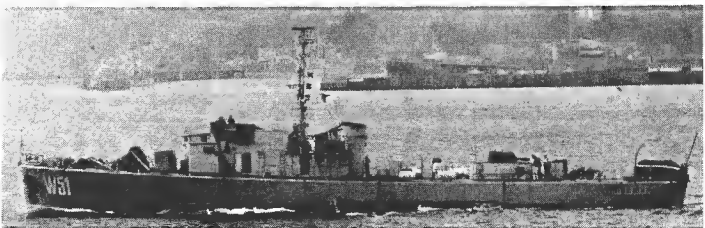


NAJADE 1965, Dr. Giorgio Arra

UW 12 (ex-PC 1618, ex-P 9) W 51

Table with 2 columns: Attribute, Value. Attributes include Displacement, Dimensions, Guns, A/S weapons, Main Engines, Radius.

Built in France by Dubigeon, Nantes under a USA off-shore order. Completed in 1955. Purchased by Germany in 1957. Commissioned on 17 Apr 1957. Submarine chaser of the US PC type. Now in operational reserve.



UW 12 1967, courtesy Dr Giorgio Arra

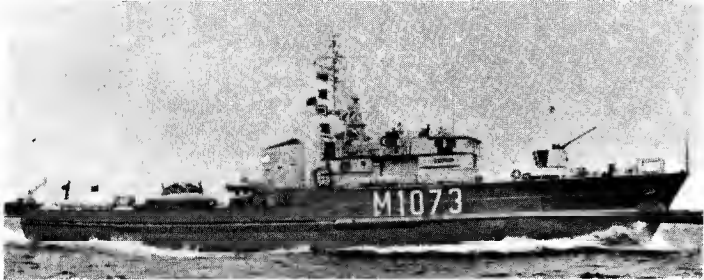
COASTAL MINESWEEPERS

18 "Lindau" Class

Table with 3 columns: Ship Name, M Number, Ship Name, M Number, Ship Name, M Number. Columns include CUXHAVEN, DÜREN, FLENSBURG, FULDA, GÖTTINGEN, KOBLENZ, KONSTANZ, LINDAU, MARBURG, MINDEN, PADERBORN, SCHLESWIG, TÜBINGEN, ULM, VÖLKlingen, WEILHEIM, WETZLAR, WOLFSBURG.

Table with 2 columns: Attribute, Value. Attributes include Displacement, Dimensions, Guns, Main Engines, Complement.

Lindau, first German-built vessel for the Federal German Navy since the Second World War, launched on 16 Feb 1957. Built by Yacht- & Bootswerft, Rurmerster, Bremen-Burg. Seventeen similar Kustennineensuchboote were built in German yards in 1958-60. The hull is of wooden construction, laminated with plastic glue. The engines are of non-magnetic materials. The first six, Göttingen, Koblenz, Lindau, Schleswig, Tübingen and Wetzlar, were modified with lower bridges in 1958-59. Schleswig was lengthened by 6.8 feet in 1960, and all others in 1960-64



SCHLESWIG 1965, Erich Grosz

6 "Vegesack" Class

Table with 3 columns: Ship Name, M Number, Ship Name, M Number, Ship Name, M Number. Columns include DETMOLD, HAMELN, PASSAU, SIEGEN, VEGESACK, WORMS.

Table with 2 columns: Attribute, Value. Attributes include Displacement, Dimensions, Guns, Main Engines.

Built in Cherbourg, under the "off-shore" programme. All launched in 1959-60. A photograph of Vegesack appears in the 1960-61 to 1963-64 editions, and of Hameln in the 1964-65 to 1966-67 editions.



DETMOLD 1967, courtesy Dr Giorgio Arra

INSHORE MINESWEEPERS

10 "Niobe" Class

Table with 3 columns: Ship Name, Date, Ship Name, Date, Ship Name, Date. Columns include AMAZONE, ARIADNE, FREYA, GAZELLE, HANSA, HERTHA, NIOBE, NIXE, NYMPHE, VINETA.

Table with 2 columns: Attribute, Value. Attributes include Displacement, Dimensions, Guns, Main Engines, Complement.

Launch dates above. Pennant Nos. W 29, 23, 24, 30, 26, 21, 28, 27, 25 respectively. All built by Krögerwerft, Rendsburg, in 1960-63. Hansa and Niobe are Type A, and the others Type 8. There are small differences. Some have minesweeping gear. All named after former large or small cruisers, 1897-1900. Formerly classified as patrol boats (Küstenwachboote) but re-rated as inshore minesweepers in 1966. A photograph of Ariadne appears in the 1963-64 to 1966-67 editions.



NIOBE 1967, courtesy Dr Giorgio Arra

Inshore Minesweepers—continued
20 New Construction. "Holnis" Class

HOLNIS M 2651	
Displacement, tons	180
Dimensions, feet	116.8 × 24.3 × 6.6
Guns	1—20 mm AA
Main engines	2 Mercedes-Benz diesels; 2 000 bhp = 14.5 knots

Holnis was launched on 22 May 1965 by Abeking & Rasmussen, Lemwerde, as the prototype of this new design of *Binnenminensuchboote*.

FAST PATROL BOATS
10 Projected

Displacement, tons	circa 250
Guided weapons	Launcher for "Tartar" missiles
Guns	2—40 mm AA

Projected under the new construction programme. Reported will have a launching system for surface-to-surface missiles.

MOTOR TORPEDO BOATS
1 Modified "Brave" Type

STRAHL P 6194	
Displacement, tons	95 standard; 110 full load
Dimensions, feet	96 (hull); 99 oa × 25 × 7 (props)
Guns	2—40 mm AA (see Notes)
Torpedoes	4—21 in in side launching chutes. (see Notes)
Main engines	3 Bristol Siddeley Marine Proteus gas turbines; 3 shafts; 12 750 bhp = 54 knots; (55.5 knots on trials)
Complement	22 (3 officers; 3 petty officers; 16 ratings)

Built by Vosper Ltd, Portsmouth. Contract announced on 22 Aug 1960. Launched on 10 Jan 1962. Commissioned on 21 Nov 1962. Of similar design to the "Brave" class fast patrol boats in the Royal Navy. Alternative armaments which can be mounted are: 4—21 in torpedoes with 1—40 mm AA gun; or 2—21 in torpedoes with 2—40 mm AA guns; or 8 ground mines with 1—40 mm AA gun. Allen reverse reduction gear boxes and Rover gas turbine generating machinery. "Strahl" means Beam.

1 Modified "Ferocity" Type

PFEIL F 6193	
Displacement, tons	75 standard; 80 full load
Dimensions, feet	92 wl; 95 oa × 23.9 × 6.5
Guns	2—40 mm AA (see Notes)
Torpedoes	2 or 4—21 in in side launching chutes (see Notes)
Main Engines	2 Bristol Siddeley Proteus gas turbines; 2 shafts; 8 500 bhp = 50 knots
Complement	14 (2 officers, 2 petty officers, 10 ratings)

Built by Vosper Ltd, Portsmouth. Contract announced on 22 Aug 1960. Launched on 26 Oct 1961. Commissioned on 27 June 1962. Based on the design of *Ferocity*, the Vosper private venture prototype. Alternative armaments which can be mounted are: 4—21 in torpedoes with 1—40 mm AA gun; or 2—21 in torpedoes with 2—40 mm AA guns; or 8 ground mines with 1—40 mm AA gun. Allen reverse reduction gear boxes and Rover gas turbine generating machinery. "Pfeil" means Arrow. A photograph of *Pfeil* as torpedo boat appears in the 1964-65 and 1965-66 editions and a builders photograph on completion in the 1962-63 and 1963-64 editions.

DISPOSALS
UW 10 (ex-*FPB* 5030, ex-S 130) and UW 11 (ex-*FPB* 5208), former motor torpedo boats rated as training vessels, were deleted from the list in 1964.

TRANSFERS. The motor torpedo boats *Hugin*, P 6191, and *Munin*, P 6192, Norwegian "Nasty" type, were lent to Turkey in Aug 1964 and later transferred outright, being renamed *Dogan* and *Marti*, respectively.



PFEIL 1966, Stefan Terzibaschitsch



STRAHL 1967, Official

Motor Torpedo Boats—continued
40 "Jaguar" Class

ALBATROS P 6069	HERMELIN P 6095	PANTHER P 6064
ALK P 6084	HYÄNE P 6099	PELIKAN P 6086
BUSSARD P 6074	ILTIS P 6058	PINGUIN P 6090
DACHS P 6094	JAGUAR P 6059	PUMA P 6097
DOMMEL P 6091	KONDOR P 6070	REIHER P 6089
ELSTER P 6088	KORMORAN P 6077	SEEAHLER P 6068
FALKE P 6072	KRANICH P 6083	SPERBER P 6076
FRETTCHEN P 6100	LEOPARD P 6060	STORCH P 6085
FUCHS P 6066	LÖWE P 6065	TIGER P 6063
GEIER P 6073	LUCHS P 6061	WEIHE P 6082
GEPAARD P 6098	MARDER P 6067	WIESEL P 6093
GREIF P 6071	NERZ P 6096	WOLF P 6062
HABICHT P 6075	OZELOT P 6101	ZOBEL P 6092
HÄHER P 6087		

Displacement, tons	160 standard; 190 full load
Dimensions, feet	138 × 22 × 5
Guns	2—40 mm AA (single)
Tubes	4—21 in (2 torpedo tubes can be removed for 4 mines)
Main Engines	Mercedes-Benz or Maybach 20 cyl diesels; 4 shafts; 12 000 bhp = 42 knots
Complement	33

32 boats were built by Fr. Lürssen, Bremen-Vegesack in 1957-62 and eight by Krögerwerft, Rendsburg in 1958-64. Of composite construction, with steel frames, mahogany diagonal carvel hulls, alloy bulkheads and superstructure. *Dachs*, *Frettchen*, *Gepard*, *Hermelin*, *Hyäne*, *Nerz*, *Ozelot*, *Puma*, *Wiesel* and *Zobel* are of improved type with a different bridge. A photograph of *Jaguar* appears in the 1958-59 to 1961-62 editions, of *Häher* in the 1962-63 to 1966-67 editions and of *Gepard* in the 1964-65 to 1966-67 editions. Ten units of the "Jaguar" class will be fitted with missiles as in the new fast patrol boats.



ZOBEL 1967, Wright & Logan



WOLF 1964, Erich Gröner

5 "Silbermowe" Class

EISMÖWE (ex-S 1) P 6055	SILBERMÖWE (ex-Silver Gull) P 6052
RAUMPÖWE (ex-S 2) P 6056	STURMMÖWE (ex-Storm Gull) P 6053
	WILDSCHWAN (ex-Wild Swan) P 6054

Displacement, tons	110 standard; 115 full load
Dimensions, feet	116 × 16.8 × 6
Guns	1—40 mm AA; 4—20 mm AA
Tubes	2—21 in
Main Engines	3 Mercedes-Benz 20 cyl diesels; 7,500 bhp = 38 knots last three 9 000 bhp = 40 knots
Complement	19

German S-boote type. Built by Lürssen, Vegesack in 1952-56. Sister *Seeschwalbe*, P 6057 (ex-S 3), renamed *UW* 9 as a training vessel in 1961, was decommissioned on 31 Jan 1964. A photograph of *Silbermowe* appears in the 1960-61 and 1961-62 editions, and of *Eismowe* in the 1962-63 to 1966-67 editions.



STURMMÖWE 1967, Official

PATROL BOATS
10 "Frauenlob" Class

FRAUENLOB W 31	NAUTILUS W 32	MINERVA
GEFION W 33	MEDUSA W 34	UNDINE W 35

Four more under construction. Similar to "Niobe" class inshore minesweepers see previous page, but rated as coastguard boats (*Küstenwachboote*).

FAST MINESWEEPERS

30 "Schütze" Class

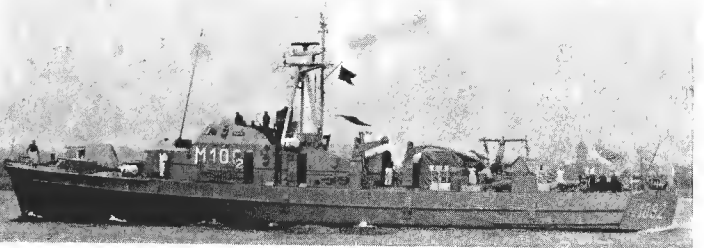
ALGOL	M 1068	MARS	M 1058	SCHÜTZE	M 1062
ATAIR	M 1067	MIRA	M 1050	SIRIUS	M 1055
CAPELLA	M 1098	NEPTUN	M 1093	SKORPION	M 1060
CASTOR	M 1051	ORION	M 1053	SPICA	M 1059
DENEB	M 1064	PEGASUS	M 1066	STEINBACK	M 1091
FISCHE	M 1096	PERSEUS	M 1090	STIER	M 1061
GEMMA	M 1097	POLLUX	M 1054	URANUS	M 1099
HERKULES	M 1095	PLUTO	M 1092	WAAGE	M 1063
JUPITER	M 1065	REGULUS	M 1057	WEGA	M 1069
KREBS	M 1055	RIGEL	M 1056	WIDDER	M 1094

Displacement, tons 200 standard; 226 full load
Dimensions, feet 144.5 pp; 154.5 oa x 22.3 x 7.2
Guns 1—40 mm AA (2—40 mm AA designed). *Atair, Gemma, Pegasus* have 2—40 mm
Main engines Maybach diesels; 2 shafts; Escher-Wyss propellers
Complement 39
3 600 bhp = 24.5 knots

Algol, Capella, Castor, Fische, Gemma, Krebs, Mars, Mira, Orion, Pollux, Regulus, Rigel, Schütze, Sirius, Skorpion, Spica, Steinback, Stier, Waage and Wega were built by Abeking & Rasmussen, Lemwerder; *Deneb, Jupiter, Pluto, Uranus and Widder* by Schürenstedt, Bardenfl. *Atair, Herkules, Neptun, Pegasus and Perseus* by Schlichting, Trarermünde. The design is a development of the "R" boats of the Second World War. All this class are named after stars. *Stier* carries no weapons, but has a decompression chamber, being security vessel for submarines. All completed in 1959-64. Formerly classified as inshore minesweepers, but re-rated as fast minesweepers in 1966.



JUPITER 1966. Wright & Logan



PLUTO 1967, courtesy Dr Giorgio Arra

4 "R" Type

OT 1 (ex-Jupiter, ex-R 146)	UW 5 (ex-R 150)
Displacement, tons 150	
Dimensions, feet 135 x 19 x 5.2	
Guns 2—20 mm AA or 4—20 mm AA	
Main Engines Diesel 2 200 bhp = 19 knots; 2 Voith-Schneider propellers	

Transferred by US Navy, being returned to Germany in 1956. *Jupiter* was renamed OT 1 for asdic training duties, and R 150, renamed UW 5, as a training vessel for the submarine weapons school. *Merkur* (ex-R 134), W 68 (ex-M 1066), is employed as security vessel for submarines.

ALDEBARAN (ex-R 131, ex-R 91)	UW 4 (ex-R 149, ex-R 102)
Displacement, tons 125	
Dimensions, feet 124 x 19 x 4.7	
Guns 1—20 mm AA	
Main Engines 2 MAN diesels; 1 840 bhp = 20 knots	
2 Voith-Schneider propellers	

UW 4, a training vessel for the submarine weapons school, was transferred to the Erprobungsstelle für Marinewaffen in Jan 1964. *Aldebaran* is now a vessel for mine-divers. A photograph of her appears in the 1964-65 to 1966-67 editions. Of the 140-ton "R" boats, OT 1 (ex-R 153, ex-R 407) was taken out of service on 20 Feb 1959 and replaced by *Jupiter*, renamed OT 1.



UW 4 Added 1967

COASTAL PATROL BOATS

FM 1 (ex-W 7, ex-Pierre Mené)	UW 1 (ex-W 10, ex-Adrien Magnier)
FM 2 (ex-W 8, ex-Malgré Tout)	TM 1 (ex-UW 3, ex-W 12, ex-No. 186)
	TM 2 (ex-UW 2, ex-W 11, ex-Miss Andrée)

Displacement, tons 140	
Dimensions, feet 118 x 22 x 11	
Guns 1—20 mm AA	
Main Engines 1 Fairbanks-Morse diesel; 450 bph = 11 knots	
Oil fuel (tons) 23	
Radius, miles 3 300	
Complement 18	

Ex-Canadian built MMS 1 with high fo'c'sle. Were Belgian fishing vessels before being bought and rebuilt in Germany. Re-rated training vessels in 1957. *FM* boats for fernmeldeshule (telecommunications). *UW 1* for underwater training and *TM*-boats for divers. *Pennant Nos.* W 54, 55, 44, 53 and 45 respectively. A photograph of *TM 2* appears in the 1962-63 to 1965-66 editions.



FM 1 Added 1966, Official

KW 15 (ex-H 15) W 15	KW 17 (ex-H 17) W 17	KW 19 (ex-H 19) W 19
KW 16 (ex-H 16) W 16	KW 18 (ex-H 18) W 18	KW 20 (ex-H 20) W 20

Displacement, tons 45 standard; 60 full load	
Dimensions, feet 83 pp; 93.5 oa x 15.5 x 4	
Guns 2—20 mm AA; (KW 19, 4—20 mm AA)	
Main Engines 2 Mercedes-Benz diesels; 2 shafts; 1 600 bhp = 25 knots	
(last three, 2 000 bhp = over 25 knots)	
Complement 18	

Formerly USN 54, 55, 56, 57, 58, 59 ex-Weser River Patrol Boats. Launched in 1951-53. Re-rated as Küstenwachboote in 1960. *KW 19*, allocated to the Gunnery School as a training vessel, was at Borkum naval base as a versetzboote (transfer boat). *KW 15, KW 16, KW 17* and *KW 20* transferred to the Bundesgrenzschutz (frontier police sea) and renumbered BG 1—4. A photograph of *KW 17* appears in the 1962-63 to 1966-67 editions.



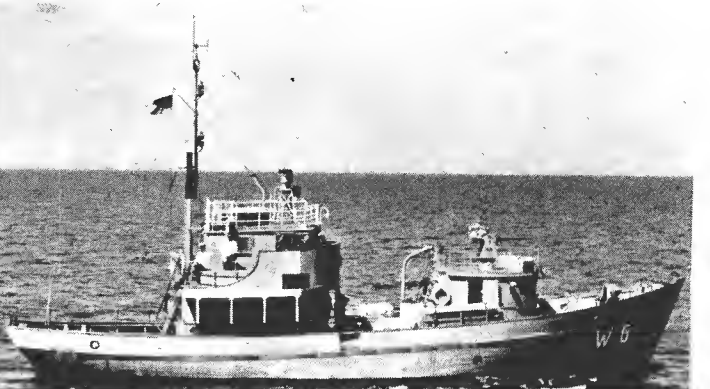
KW 18 1967, Stefan Terzibaschtsch

KW 1 (ex-H 1, ex-KFK 309)	W 1	KW 6 (ex-H 6, ex-W 15) W 6
KW 2 (ex-H 2, ex-W 2, ex-KFK 613)	W 2	KW 7 (ex-H 7, ex-W 16) W 7
KW 3 (ex-H 3, ex-W 3, ex-KFK 561)	W 3	KW 8 (ex-H 8, ex-W 17) W 8

Displacement, tons 112	
Dimensions, feet 78.8 x 22 x 9	
Guns 1—20 mm AA	
Main Engines 1 diesel motor; 150 bhp = 9 knots	
Radius, miles 1 200	
Complement 16	

KFK (Kriegsfischekutter) type picket boat (wechtboote). Launched in 1943. Rebuilt in 1951-52. Rated as Hafenschutzboote (harbour defence boats) until 1960 when they were re-rated as Küstenwachboote.

KW 4, KW 5, KW 9 and KW 10 given to Tanzania (shipped on 8 Dec 1963).



KW 6 1966, Official

MINELAYERS**3 Ex-U.S. LST Type**

BAMBERG (ex-USS *Greer County*, LST 799) N 122 (ex-A 1403)
BOCHUM (ex-USS *Rice County*, LST 1089) N 120 (ex-A 1404)
BOTTROP (ex-USS *Saline County*, LST 1101) N 121 (ex-A 1405)

Displacement, tons 1 653 standard; 4 080 full load
 Dimensions, feet 316 wl; 328 oa × 50 × 14
 Guns 6—40 mm (2 twin, 2 single)
 Main Engines 2 GM diesels; 2 shafts; 1 700 bhp = 11 knots
 Oil fuel (tons) 600
 Radius, miles 15 000 at 9 knots

Former United States tank landing ships of the 511-1152 series transferred in 1961. All converted into minelayers. Commissioned on 6 Feb 1964. A photograph of *Bamberg* (as LST A 1404) appears in the 1962-63 and 1963-64 editions.



BOTTROP

1967, Col. Breyer

MEDIUM LANDING SHIPS (ROCKET)**2 Ex-U.S. LSMR Type**

NATTER (ex-*Thames River*, LSM(R) 534) **OTTER** (ex-*Smyrna River*, LSM(R) 532)

Displacement, tons 994 attack; 1 084 full load
 Dimensions, feet 204.5 wl; 206.2 oa × 34.5 × 7.8
 Guns 1—5 in; 4—40 mm AA (twin); 8—5 in rocket projectors
 Main Engines GM diesels; 2 shafts; 2 800 bhp = 12.6 knots
 Oil fuel (tons) 60
 Radius, miles 2 500 at 12 knots
 Complement 100

Former United States Medium Landing Ships (Rocket). Rated as Landungsunterstützungsboote (see Notes below). Pennant Nos.: L 755 and L 754 respectively. A photograph of *Natter* appears in the 1960-61 to 1966-67 editions.



OTTER

1967, Official

MEDIUM LANDING SHIPS**6 New Construction**

Four large landing craft or medium landing ships of 1 000 tons are projected

4 Ex-U.S. LSM Type

EIDECHSE (ex-USS LSM 491) L 751 **SALAMANDER** (ex-USS LSM 553) L 752
KROKODIL (ex-USS LSM 537) L 750 **VIPER** (ex-USS LSM 558) L 753

Displacement, tons 743 beaching; 1 095 full load
 Dimensions, feet 196.5 wl; 203.5 oa × 34.5 × 8.3
 Guns 2—40 mm AA (twin)
 Main Engines GM diesels; 2 shafts; 2 800 bhp = 12.5 knots
 Oil fuel (tons) 60
 Radius, miles 2 500 at 12 knots
 Complement 50

Rated as Landungsboote. All the above six landing ships (two LSM(R) and four LSM) were purchased from USA for about \$6 000 000 and transferred to Germany on 5 Sep 1958 at Charleston SC. Refitted in 1959. They constitute the German Landungsgeschwader No. 2. A large port quarter oblique aerial view of *Viper* appears in the 1960-61 edition (Page 434, Addenda), a starboard bow surface view of *Salamander* in the 1960-61 and 1961-62 editions, and a starboard view of *Krokodil* showing helicopter landing deck aft in the 1962-63 to 1966-67 editions.



EIDECHSE

1967, Official

LANDING CRAFT**22 LCU Type**

BARBE L 790 **FELCHEN** L 793 **LACHS** L 762 **SALM** L 799
BRASSE L 789 **FLUNDER** L 760 **MAKRELE** L 796 **SCHLEIE** L 765
BUTT L 788 **FORELLE** L 794 **MURANE** L 797 **STOR** L 766
DELPHIN L 791 **INGER** L 795 **PLOTZE** L 763 **TUMMLER** L 767
DORSCH L 792 **KARPFFEN** L 761 **RENKE** L 798 **WELS** L 768
ROCHEN L 764 **ZANDER** L 769

Displacement, tons 200 light; 403 full load
 Dimensions, feet 136.5 × 28.9 × 5.2
 Guns 1—20 mm AA
 Main engines GM diesels; 2 shafts; 1 380 bhp = 12 knots
 Complement 17

Brasse and *Butt* commissioned at Blohm & Voss on 7 May 1965, with 20 of the type to follow.

In Dec 1961 four landing craft were ordered from Schlickerwerft, Hamburg, and delivery was planned for 1962, but the firm relinquished the contracts which were taken over by Blohm & Voss.



DELPHIN

1967, Official

LCU 1 (ex-USS LCU 779, ex-LCT (6) 779)

Displacement, tons 160 light; 320 full load
 Dimensions, feet 105 pp; 119 oa × 32.7 × 5
 Main Engines Diesels; 3 shafts; 675 bhp = 10 knots

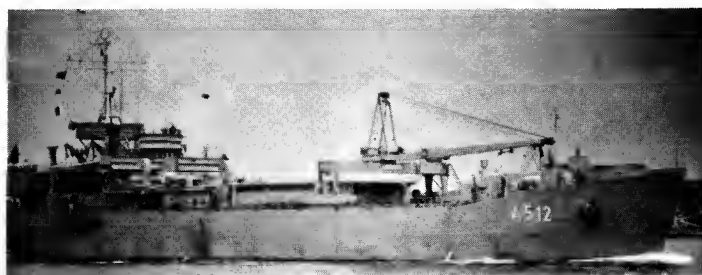
Former utility landing craft transferred from the USA under MAP. A photograph appears in the 1963-64 to 1966-67 editions.

REPAIR SHIPS**2 Ex-U.S. ARB, ex-LST Type**

ODIN (ex-USS *Diomedes*, ARB 11, ex-LST 1119) A 512
WOTAN (ex-USS *Ulysses*, ARB 9, ex-LST 967) A 513

Displacement, tons 1 625 light; 4 100 full load
 Dimensions, feet 316 wl; 328 oa × 50 × 11
 Guns 8—40 mm AA
 Main Engines 2 GM diesels; 2 shafts; 1 800 bhp = 11.6 knots
 Oil fuel (tons) 600
 Radius, miles 15 000 at 9 knots

Transferred under MAP in June 1961. *Odin* commissioned in Jan 1966 and *Wotan* on 2 Dec 1965.



ODIN

1967, Stefan Terzibaschitsch

2 Ex-U.S. LST Type

Ex-USS **MILLARD COUNTY**, LST 987
 Ex-USS **MONTGOMERY COUNTY**, LST 1041

Displacement, tons 1,650 standard; 4,080 full load
 Dimensions, feet 316 wl; 328 oa × 50 × 14
 Main Engines 2 GM diesels; 2 shafts; 1 700 bhp = 11 knots
 Oil fuel (tons) 600
 Radius, miles 15 000 at 9 knots

Purchased in 1960 for conversion into repair ships similar to the US AR8 type.

WIELAND Y 804

Displacement, tons 130
 Dimensions, feet 121.5 × 19.7 × 5

Repair ship of the Former German Navy. Commissioned on 10 Aug 1956. Rated as schimmwerkstattschiff (floating workshop).

MEMMERT (ex-USN 106, ex-*India*, ex-BP 34) Y 805

Measurement, tons 270 gross
 Dimensions, feet 100 pp; 108.2 oa × 31 × 5.8
 Main Engines 2 diesels; 2 shafts

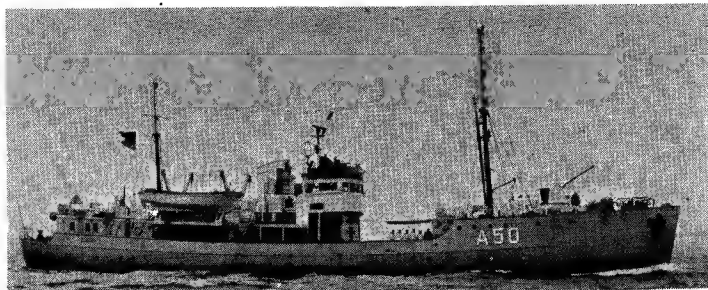
Salvage vessel with a derrick. Built in 1940 at Walsum (Rhine river). Rated as Torpedoklarmachschiff (torpedo repair ship). Crew of five.

DEPOT SHIPS AND TENDERS

EIDER (ex-Catherine, ex-Dochet) A 50 **TRAVE** (ex-Caroline, ex-Flint) A 51

Displacement, tons 480 standard; 750 full load
 Dimensions, feet 164 pp; 177.2 oa × 27.5 × 14
 Guns 1—40 mm AA; 1—20 mm AA
 Main Engines *Eider*: Triple expansion; 1 shaft; 750 ihp = 12 knots
Trave: Mercedes-Benz diesels; 1 shaft; 900 bhp = 12 knots
 Fuel (tons) *Trave*: 153; *Eider*: 130
 Complement 45

Former British "Isles" type minesweepers (trawlers). Built in Canada. *Trave* converted from steam (triple expansion) to diesel-electric propulsion. Photograph of *Trave* in the 1957-58 to 1959-60 editions. *Eider* is employed as a mine clearance vessel.



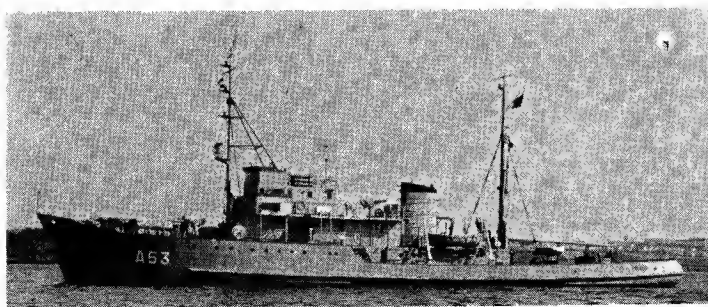
EIDER

Added 1966, Wright & Logan

EMS (ex-USN 104, ex-Harle) A 53

Measurement, tons 660 gross
 Dimensions, feet 185.7 oa × 29 × 15.5
 Guns 4—20 mm
 Main Engines Sulzer diesels; 1 000 bhp = 12 knots

Built in 1941 by Kremer & Sohn, Elmshorn. Commissioned on 11 Dec 1956.



EMS

1966, Official

OSTE (ex-USN 101, *Puddefjord*) A 52

Measurement, tons 567 gross
 Dimensions, feet 160 × 29.7 × 17
 Guns 2—20 mm AA
 Main Engines 2 Sulzer diesels; 1 shaft; 1 400 bhp = 14 knots

Built in 1943 at Akers Mekaniske Vaerkstad, Oslo. Taken over from the US Navy.

DISPOSAL

The depot ship WS 1 (ex-City of Havana, ex-José Martí, ex-Northway, ex-LSD 11), former US Landing Ship, Dock, then a West Indian fruit carrier, latterly employed by the West German Navy as an accommodation ship, was sold to Greek mercantile interests in 1966.

FRIEDRICH VOGEL (ex-Kurefjord, 1943) Former tug. Y 888

Measurement, tons 179 gross
 Main Engines Diesel; 500 bhp

KARL KOLLS (ex-Salmo, ex-Gerda 1, ex-Margarethe, ex-Nora) Y 887

Measurement, tons 189 gross
 Main Engines 160 hp

Both experimental tenders of the Erprobungstelle für Marinewaffen in Echernförde. *Karl Kolls*, former small freighter, is fitted with one torpedo tube.

OTTO MEYCKE Pennant No Y 882 *Taucherboot* (diving boat). Fishing cutter type.

BOOM DEFENCE VESSELS

WALTHER VON LEDEBUR

Displacement, tons 725
 Dimensions, feet 206.7 × 54.5 × 12.7
 Main engines Maybach diesels; 2 shafts; 5 000 bhp = 19 knots

Built by Burmeister, Bremen-Burg. Launched on 2 July 1966.

SP 1**WILHELM PULLWER**

Displacement, tons 132
 Main engines Designed for speed of 12.5 knots

Built by Gebr. Schurestedt, Bardenfleth. Launched on 21 June 1966 and 16 Aug 1966 respectively.

SUPPLY SHIPS (*Tross-schiffe*)

4 Projected Heavy Type

Displacement, tons 6 000
 Guns 2—3 in (76 mm)
 Main Engines Speed = 17 knots designed

Rated as *Grosse Versorger* or heavy maintenance, support, and provision ship.

1 Projected Torpedo Type

Displacement, tons 3 000
 Guns 4—40 mm AA (two twin mountings)
 Main engines Designed for a speed of 17 knots

Rated as a supply ship and transport for torpedoes, etc., or *Torpedotransporter*.

1 New Construction Mine Type

Displacement, tons 2 962
 Guns 4—40 mm AA (two twin mountings)
 Main engines Speed = 17 knots designed

Under construction by Blohm & Voss, Hamburg. Rated as *Minentransporter*.

2 "Westerwald" Class

ODENWALD A 1436**WESTERWALD** A 1435

Displacement, tons 3 140
 Dimensions, feet 347.8 × 46 × 12.2
 Guns 4—40 mm AA
 Main engines Diesels; 5 600 bhp = 17 knots
 Complement 60

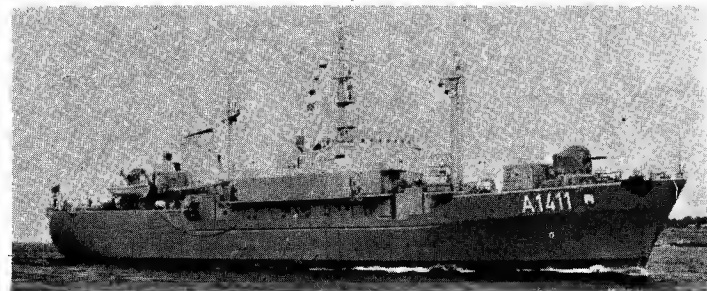
Ammunition transports of a new type built by Lübecker Masch in 1966-67.

7 + 1 "Lüneburg" Class

COBURG A 1412
FREIBURG A 1413
GLÜCKSBURG A 1414**LÜNEBURG** A 1411
NIENBURG**OFFENBURG**
SAARBURG

Displacement, tons 3 254
 Dimensions, feet 341.2 × 43.3 × 13.8
 Guns 4—40 mm AA
 Main engines 2 Maybach diesels; 2 shafts; 5 600 bhp = 17 knots
 Complement 103

Lüneburg, *Coburg*, *Glücksburg* and *Nienburg* were built by Hansbury Schiffb and Vulkan, Vegesack, others by Blohm & Voss, Hamburg. *Coburg* and *Lüneburg* were launched on 15 Dec 1965 and 3 May 1965 respectively.



LÜNEBURG

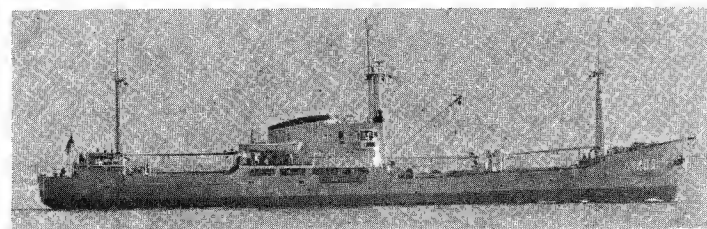
1967, Stefan Terzibaschitsch

2 "Angeln" Class

ANGELN (ex-Borée) A 1408**DITHMARSCHEN** (ex-Hébé) A 1409

Measurement, tons 2 111 gross
 Main Engines Pielstick diesels; 1 shaft; 3 000 bhp = 17 knots

Both built by Ateliers et Chantiers de Bretagne, Nantes. Purchased from shipowners S. N. Caennaise, Caen. Launched in 1954-55. Commissioned on 27 Nov 1959 and 19 Dec 1959, respectively. Rated as *Materialtransporter*. A photograph of *Dithmarschen* appears in the 1963-64 to 1966-67 editions.



ANGELN

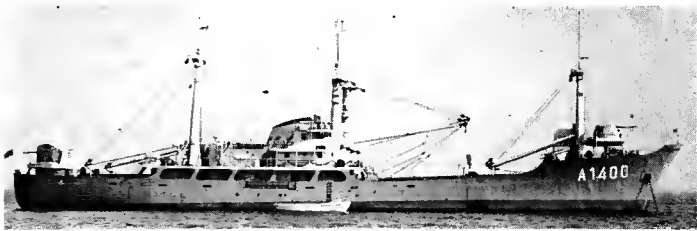
1967, courtesy Dr Giorgio Arra

Supply Ships—continued

SCHWARZWALD (ex-Amalthee) A 1400

Measurement, tons 1 103 gross
Guns 4—40 mm AA Bofors
Main Engines Sulzer diesel; 3 000 bhp = 17 knots

Built by Ch. Dubigeon, Nantes. Launched 31 Jan 1956. Purchased from Soc Navale Caennaise in Feb 1960. Commissioned as ammunition transport.

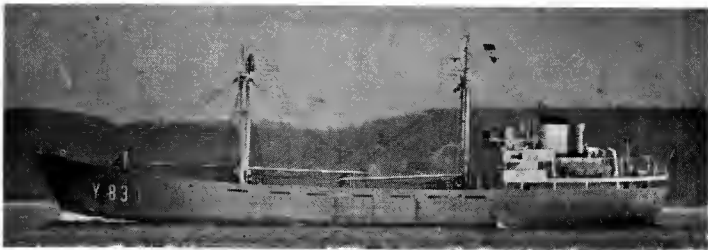


SCHWARZWALD 1967. Official

SAUERLAND (ex-Rolandseck) Y 830

Measurement, tons 1 299 gross; 1 755 deadweight
Dimensions, feet 233.2 x 36.2 x 16 5
Main Engines MAN diesel; 1 380 bhp = 12 knots

Built by Atlas Werke, Bremen. Completed in 1953. Purchased in 1960 for service with the armed forces' supply organisation. In service 1960.



SAUERLAND 1965. Stefan Terzibaschitsch

PFÄLZERLAND (ex-Lucetta) Y 831

Measurement, tons 299 gross; 521 deadweight
Dimensions, feet 156.1 x 26 x 8.2
Main Engines 2 MWM diesels; 2 shafts; 300 bhp = 10.5 knots

Built by W. & E. Sielaff Büsum. Completed in 1956. Purchased in 1960 for service with the armed forces' supply organisation. In service 1960.

SIEGERLAND (ex-Leuchtenburg 3) Y 832

Measurement, tons 280 gross, 350 deadweight

Built in 1952. Material-Versorger.

New construction transports launched on 15 Dec 1965 and 3 May 1965 respectively.

SAIL TRAINING SHIPS

GORCH FOCK

Displacement, tons 1 760 standard; 1 870 full load
Dimensions, feet 229.7 wl; 257 oa x 39.2 x 15.8
Main Engines Auxiliary MAN diesel; 800 bhp = 11 knots
Sail area, sq ft 21 141 (speed of up to 15 knots under sail)
Radius, miles 1 990
Complement 206 (10 officers, 56 ratings, 140 cadets)

Sail training ship of the improved "Horst Wessel" type. Barque rig. Launched by Blohm & Voss, Hamburg, on 23 Aug 1958 and commissioned on 17 Dec 1958.

NORDWIND

Displacement, tons 100
Dimensions, feet 78.8 x 22 x 9
Main Engines Diesel; 150 bhp = 8 knots. (Sail area 2 037.5 sq ft)

Ketch, ex-Kriegsfischkutter (KFK). Photograph in the 1954-55 edition. There are other vessels of various sailing types: Achat, Argonaut, Borasco, Diamont, Dompfaff, Fibustier, Freibeuter, Geuse, Gödicke Michel, Gunnar, Hadubrand, Hunding, Kaper, Klipper, Korsar, Kuckuck, Likendeeler, Magellan, Mime, Mistral, Monsun, Nachtigall, Ortwin, Ostwind, Pampero, Samum, Schirocco, Seeteufel, Siegmund, Störtebecker, Taifun, Tornado, Westwind, Wiking, Vitalienbrüder.

TRIALS VESSELS

ADOLF BESTELMEYER (ex-BYMS 2213) HERMAN VON HELMOLTZ
H. C. OERSTED (ex-Vinstra, ex-NYMS 247) RUDOLF DIESEL (ex-BYMS 2279)

Displacement, tons 270 standard; 350 full load
Dimensions, feet 136 x 24.5 x 8
Main Engines 2 diesels; 2 shafts; 1 000 bhp = 15 knots;

Of US YMS type. Built in 1943. Adolf Bestelmeyer, Y 881, and Rudolph Diesel, Y 889, are used for gunnery purposes. H. C. Oersted, Y 877, was acquired from the Royal Norwegian Navy. Herman von Helmholtz, Y 878, commissioned on 18 Dec 1962, is used as a degaussing ship.



H. C. OERSTED 1967, Stefan Terzibaschitsch

VIKTORIA (ex-Herzog Friedrich) Y 808
Measurement, tons 111 gross
Dimensions, feet 84.7 x 16.8 x 8.2
Main Engines 1 Deutsche Werke diesel; 240 bhp

Built in 1901. Commissioned on 1 Dec 1960 as an experimental vessel.

TF 101 TF 102 TF 103 TF 104 TF 105
Displacement, tons 35 to 40
Dimensions, feet 59 to 80.5 x 14 x 5
Main Engines Speed = 18 to 22 knots

Of the admiral's large type. Torpedo recovery boats. Built in 1939-40. TF 101-104 are in the Erprobungstelle für Marinewaffen (experimental station for Naval weapons). Pennant No.: Y 883, Y 884, Y 885, Y 886, Y 835, respectively.

TF 25 TF 26
Displacement, tons 25
Dimensions, feet 74 x 13.8 x 4
Main Engines Diesels; 1 shaft; 320 bhp = 14.5 knots

Former German Air Force torpedo recovery boats. Patrol vessels employed as training tenders. Pennant No.: Y 806 and 807.

EF 1
Trials vessel commissioned on 30 Nov 1961. Pennant No: Y 890.

SURVEYING VESSELS include Metear (1964), Süderoog, Gauss, Hooge, Ruden, Altair, Rungholt and Wego, administered by the Federal Ministry of Transport.

FISHERY PROTECTION VESSELS include Poseidon, Anton, Dohrn, Meerkatze, Frithjof and Uthorn, administered by the Federal Ministry for Agriculture and Fisheries.

RESCUE LAUNCHES
4 "KW" Type

FL 5 (ex-H 11, ex-P 1) FL 7 (ex-H 13, ex-P 3)
FL 6 (ex-H 12, ex-P 2) FL 8 (ex-H 14, ex-P 4)

Displacement, tons 45 standard; 60 full load
Dimensions, feet 83 pp; 93.5 oa x 15.5 x 4
Main Engines 2 Mercedes-Benz diesels; 2 000 bhp = 25 knots
Complement 14

Built 1951-52. All are similar to US Coast Guard 93-ft type. Formerly rated as harbour defence vessels, but re-rated as Flugsicherungsboote (employed as air/sea rescue launches) in 1959. Pennant Nos.: Y 857-860 (ex-W 11-14). Guns removed.

DISPOSALS
FL 1 (ex-FL 51, ex-MSM 2) was disposed of in 1962. FL 4 (ex-Falke, ex-FL 4), a smaller type of aircraft rescue boat, was also disposed of in 1962.
FL 2 (ex-FL 52, ex-MSM 3) and FL 3 (ex-FL 50, ex-MSM 1), ex-German Air Force sea rescue launches, were disposed of on 2 Aug and 1 Aug 1963 respectively.



FL 5 1962, Erich Gröner

*FL 9 (ex-RAF 2763) FL 10 (ex-RAF 2765) FL 11 (ex-RAF 2766)

Displacement, tons 70
Dimensions, feet 95.2 x 16.5 x 4.2
Main Engines Maybach diesels; 2 shafts; 3 200 bhp = 30 knots
Radius, miles 600 at 20 knots

Built by Kröger, Rendsburg. Former Flugsicherungsboote of the RAF station List/Sylt. Commissioned on 1 Sep 1961. Pennant Nos.: Y 861, Y 862 and Y 863.

OILERS

5 Projected

Displacement, tons 6 000
Guns 2—40 mm AA
Main engines Pielstick diesel, one shaft, 5 050 bhp = 17 knots designed

In the new construction programme. Builders: Schichau, Bremenhaven. Rated as Grosse Betriebstofftransporter.

4 New Construction

AMERSEE A 1425
TEGERNSEE A 1426
WALCHENSEE A 1424
WESTENSEE A 1427

Displacement, tons 1 898
Dimensions, feet 233 x 36.7 x 13.5
Main engines Diesels, 2 shafts; 1 400 bhp = 12.6 knots

Built by Lindenau, Friedrichsort. Walchensee was launched on 10 July 1965.

6 FW Type

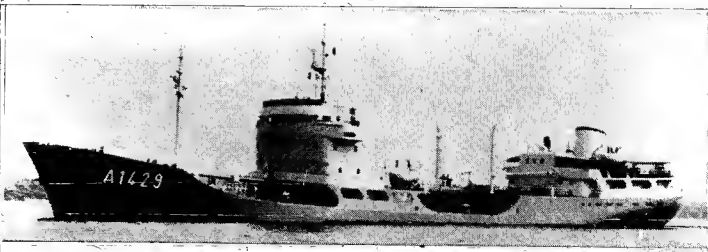
FW 1 FW 2 FW 3 FW 4 FW 5 FW 6
Displacement, tons 350
Dimensions, feet 144.4 x 25.6 x 8.2
Main engines MWM diesel, 230 bhp = 9 knots

Built by Germania in 1963-64. Actually employed as Frischwasserboote.

EIFEL (ex-Friedrich Jung) A 1429

Displacement, tons 2 279 light; 4 700 full load
Measurement, tons 3 444 gross; 4 720 deadweight
Dimensions, feet 334 x 47.2 x 23.3
Main Engines 3 360 hp = 14 knots

Built in 1958 by Norder-Werft, Hamburg. Purchased in 1963 for service as an oiler in the Bundesmarine. Commissioned on 27 May 1963.



EIFEL 1964, Erich Gröner

HARZ (ex-Claere Jung) A 1428
Displacement, tons 1 308 light; 3 696 full load
Measurement, tons 2 594 gross; 3 755 deadweight
Dimensions, feet 303.2 x 43.5 x 21.7
Main Engines 2 520 hp = 13 knots

Built in 1953 by Norder-Werft, Hamburg. Purchased in 1963 for service as an oiler in the Bundesmarine. Commissioned on 27 May 1963.

FRANKENLAND (ex-Münsterland, ex-Powell) Y 827
Displacement, tons 16 310
Measurement, tons 11 700 gross
Dimensions, feet 521.8 x 70.2 x 37.5
Main Engines Diesels, 5 800 bhp = 13.5 knots

Built by Lithgows, Glasgow. Launched in 1950. Commissioned on 29 Apr 1959.



FRANKENLAND 1966, Skyfotos

JEVERLAND (ex-Ammerland, ex-Kongsdal) Y 826
Displacement, tons 14 890
Measurement, tons 9 949 gross
Dimensions, feet 492.5 x 66 x 36.5
Main engines Diesels; 4 100 bhp = 12 knots

Built by Vulkan, Bremen. Launched in 1937. Commissioned on 29 Apr 1959.



JEVERLAND 1967, Stefan Terzibaschitsch

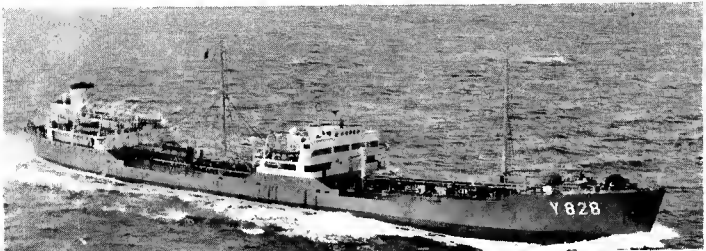
BODENSEE (ex-Unkas) A 1406
Displacement, tons 1 200
Measurement, tons 1 230 deadweight; 980 gross
Dimensions, feet 208.3 x 32.5 x 15
Main Engines Diesels; 1 050—1 250 bhp = 12 knots
WITTENSEE (ex-Sioux) A 1407

Built by P. Lindenau, Kiel-Friedrichsort. Launched on 19 Nov 1955 and an 23 Sep 1958, respectively. Commissioned on 26 Mar 1959. These ships are nearly identical.

Oilers—continued

EMSLAND (ex-Antonio Zotti) Y 828 MÜNSTERLAND (ex-Angela Germona) Y 829
Measurement, tons 6 200 gross (Emsland); 6 191 (Münsterland)
Dimensions, feet 461 x 54.2 x 25.8
Main Engines Diesel; CRDA; 4 800 bhp (Emsland); Fiat 5 500 bhp (Münsterland) = 13 knots

Built by CRDA Monfalcone, and Ansaldo, Genoa, respectively. Both launched in 1943. Completed in 1947 and 1946, respectively. Purchased in 1960 from Italian owners. Converted in 1960-61 by Schliekerwerft, Hamburg, and Howaldswerke, Hamburg, respectively. Commissioned 7 Nov 1961 and 16 Oct 1961. Civilian crew.



EMSLAND 1965, Skyfotos

BORKUM (ex-USN 105, ex-Borkum) Y 824
Displacement, tons 450
Measurement, tons 265 gross
Dimensions, feet 124.7 x 26.5 x 12
Main Engines Diesels; Speed = 6 knots

Built by Flender Lübeck. Launched in 1939. Former German motor tanker.

EUTIN (ex-Ramsøy) Y 825
Displacement, tons 410
Main engines Speed = 6 knots

Built by Menzer, Geesthacht. Launched in 1943. Commissioned on 1 July 1956.

TUGS

BALTRUM LANGEORG SPIEKEROOG
JUIST NORDERNEY WANGEROOGE
Displacement, tons 854 standard; 1 024 full load
Dimensions, feet 170.6 x 39.4 x 12.8
Guns 1—40 mm AA
Main engines Diesel-electric; 2 400 hp = 13.8 knots
Complement 36

Built by Schichau, Bremerhaven. Wangerooge, prototype, salvage tug, was launched on 4 July 1966.

FEHMARN HELGOLAND
Salvage tugs with diesel-electric propulsion of 4 000 bhp and speeds of 16.5 knots. Launched on 25 Nov 1965 and 8 Apr 1965, respectively.

AMRUM Y 822 FÖHR Y 821 NEUWERK Y 823 SYLT Y 820
Displacement, tons 262 standard
Dimensions, feet 100.7 x 25.2
Main Engines 1 Deutz diesel 800 bhp = 12 knots

Built by Fr. Schichau, Bremerhaven. Launched in 1961. All completed in 1962-63.

EISBÄR A 1402 EISVOGEL A 1401
Displacement, tons 560 standard
Dimensions, feet 125.3 x 31.2 x 7.9 (15.1 max)
Guns Can carry 1—40 mm AA 80fors
Main Engines 2 Maybach diesels; 2 shafts; 2 400 bhp = 13 knots

Built by J. G. Hitzler, Lauenburg. Launched on 9 June 1960 and 28 Apr 1960, respectively and commissioned on 1 Nov 1961 and 11 Mar 1961. Can serve as icebreakers or tugs.

PASSAT (ex-USN 103, ex-Passat) Y 800
Displacement, tons 460
Dimensions, feet 118 x 26.2 x 13
Main Engines Diesels; 650 bhp = 11 knots

Built at Deutsche Werke, Kiel. Launched in 1936. Commissioned on 30 Nov 1956.

PELLWORM (ex-USN 102, ex-Pellworm) Y 801
Displacement, tons 500
Measurement, tons 276 gross
Dimensions, feet 127 x 28 x 11.7
Main Engines 1 diesel; 1 shaft; 800 bhp = 12 knots

Built in 1939 at Schichau, Königsberg. Commissioned on 1 Nov 1956.

PLÖN Y 802
Measurement, tons 101 gross
Main Engines 350 hp

Tug for Kiel purchased in 1956.

BLAUORT (1 Dec 1960) Y 803 NORDSTRAND (25 Feb 1959) Y 817
KNECHTSAND (18 Dec 1958) Y 814 SCHARHÖRN (2 Jan 1959) Y 815
LANGENESS (29 Apr 1959) Y 819 TRISCHEN (7 Apr 1959) Y 818
LÜTJE HÖRN (1 Oct 1958) Y 812 VOGELSAND (21 Jan 1959) Y 816
MELLUM (10 Nov 1958) Y 813

Small harbour tugs. Pennant Nos. and commissioning dates against names above.

GERMANY (EAST)

Administration

Commander-in-Chief, Volksmarine:
Vice Admiral Willi Ehm

Chief of Naval Staff:
Rear Admiral Heinz Neukirchen

Strength of the Fleet

- 4 Escorts
- 59 Minesweepers
- 51 Patrol Vessels
- 48 Torpedo Boats
- 50 Minesweeping Boats
- 93 Defence Boats
- 18 Landing Craft
- 45 Auxiliary Vessels

Personnel

1967: 11 000 (1 000 officers, 10 000 men)

Mercantile Marine

Lloyds Register of Shipping:
300 vessels of 642 263 tons gross

ESCORTS

4 Ex-U.S.S.R. "Riga" Type

ERNST THÄLMANN (KSS 401) KARL LIEBKNECHT (KSS 402)
FRIEDRICH ENGELS (KSS 403) KARL MARX (KSS 404)

- Displacement, tons: 1 050 standard; 1 350 full load
- Dimensions, feet: 278.9 oa x 31.2 x 9
- Guns: 3—3.9 in single; 4—37 mm AA paired vertically
- Tubes: 3—21 in
- A/S weapons: 4 depth charge projectors
- Main Engines: Geared turbines; 2 shafts; 24 000 shp = 28 knots
- Oil fuel (tons): 300
- Complement: 190

Designed to carry 50 mines. Originally numbered 1-61, 1-62, 1-63, 1-64, then 40, 41, 42, 43. A fifth ship of this type was burnt out at the end of 1959 and became a total wreck. Pennant No. 502 is also used (see photograph below).



KSS 502 1965, Werner Kahling



ERNST THÄLMANN 1962

MINESWEEPERS

10 "Krake" Class

MLR 121 MLR 163 MLR 221 MLR 263 MLR 342
MLR 142 MLR 191 MLR 242 MLR 321 MLR 363

- Displacement, tons: 650
- Dimensions, feet: 229.7 x 26.5 x 12.2
- Guns: 1—3.4 in; 10—25 mm AA paired vertically
- A/S weapons: 4 DCT
- Main Engines: Diesels; 2 shafts; 34 000 bhp = 18 knots
- Complement: 80 (peace) 96 (war)

Built in 1956-58 at Peenewerft, Wolgast. The first four were completed in 1958, originally for Poland, but not delivered. Appearance is different compared with the first type, the squat wide funnel being close to the bridge work with a lattice mast and radar. Formerly numbered 6-17, 6-37, 6-41 to 6-47 and 6-91, but now assigned three digit numbers as above. Fitted for minelaying. These ten MLR and the following twelve are reported to have changed their tactical numbers. On 1 Mar 1961 they were given the names of the capitals of districts etc, of Eastern Germany.



MLR 221 1966, Col Breyer

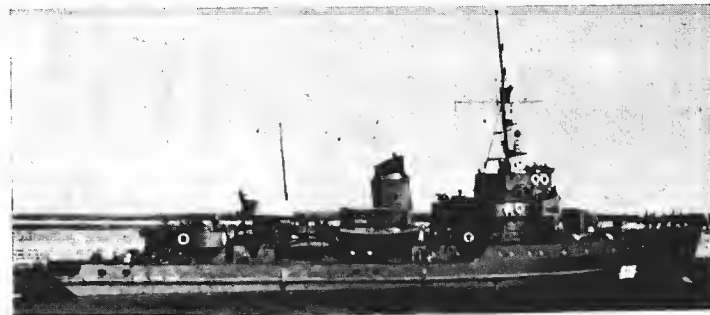
Minesweepers—continued

6 "Habicht II" Class

MLR 611 MLR 612 MLR 613 MLR 614 MLR 615 MLR 616

- Displacement, tons: 550
- Dimensions, feet: 213 oa x 26.5 x 11.8
- Guns: 1—3.4 in; 8—25 mm AA paired vertically
- A/S weapons: 4 DCT
- Main Engines: 2 diesels; 2 shafts; 2 800 bhp = 18 knots

Ex-6-91, 6-92, 6-71-74, ex-6-111-116, ex-621 to 626. These are a modification of the "Habicht I" class, but lengthened by 20 feet amidships. Built at Wolgast Peene Yard. All welded. All completed in 1955-56. Fitted for minelaying.



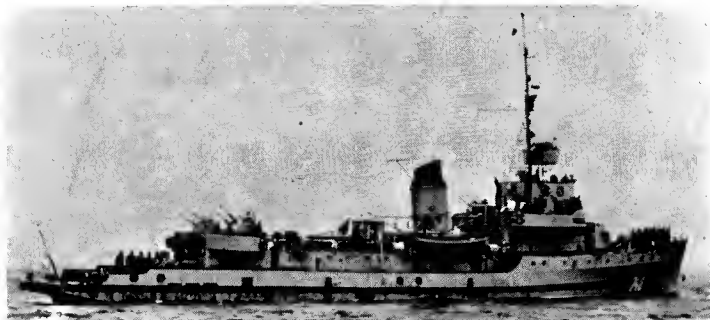
MLR 616 1963, Erich Groner

6 "Habicht I" Class

720 740 760 780 R 21 R 22

- Displacement, tons: 500 standard
- Dimensions, feet: 193.5 oa x 26.2 x 11.8
- Guns: 1—3.4 in; 8—25 mm AA; 2—20 mm AA
- A/S weapons: 4 DCT
- Main Engines: Diesels; 2 shafts; 2 400 bhp = 17 knots

Ex-MLR 6-31 to 6-36, ex-331-336, ex-031-036, formerly 611 to 616. *Habicht* means Hawk. Modified German M 40 type minesweepers but with diesel propulsion. Pre-fabricated in five sections and assembled at Volkswerft, Stralsund. Laid down in 1952-53, launched in 1952-54 and completed in 1952-54. All welded. Fitted to carry 18 mines. MLR 6-33 sank early in 1958 but was salvaged and repaired in 1959 and serves as a rescue ship. Four ships are employed as patrol escort ships as well as minesweepers, with numbers 720, 740, 760, 780, the other two having been converted to rescue ships in 1961 and numbered R 21 and R 22.



MLR 740 1963, Erich Gröner

TRAINING SHIPS

ALBIN KÖBIS (ex-Ernst Thälmann, ex-Dorsch, ex-Hvidbjørnen)

- Displacement, tons: 1 050
- Dimensions, feet: 220 oa x 32.5 x 16.5 max
- Guns: 1—3.4 in; 2—37 mm AA; 4—25 mm AA
- Main Engines: Triple expansion; 1 shaft; 1 800 shp = 14.5 knots
- Boilers: 2 water tube
- Oil fuel (tons): 140
- Radius, miles: 3 300 at 12 knots

Ex-Danish fishery protection ship *Hvidbjørnen*. Launched in 1928 and completed in 1929. Rebuilt and modernised in 1953-54 as a corvette at Matthias Thesen Yard, Wismar. Fitted with new boilers at Rostock in 1957. Training ship for officer candidates until 1963. A photograph appears in the 1956-57 to 1963-64 editions.

WILHELM PIECK

- Displacement, tons: 200
- Main Engines: Diesel; 1 shaft; 106 bhp = 8 knots

Brigantine employed as a school ship. Built in 1951. Photo in 1955-56 edition. Also yachts, *Ernst Thälmann*, 150 tons, *Horst Ludwig*, *Jonny Scheer*, 120 tons, and *Ostseeland*, 300 tons, and *Max Riechpietsch*, *Albin Köbis*, *Heligoland* and *Knechtsand*, and *Freundschaft* and *Patriot*, ex-German R-boat type coastal minesweepers.

MISSILE PATROL BOATS

2 U.S.S.R. "Osa" Class

Displacement, tons	160 standard; 200 full load
Dimensions, feet	121.3 pp; 131.5 oa x 28 x 6.5 max
Guided weapons	4 large hooded missile launchers in 2 pairs abreast
Guns	4—25 mm (2 twin, 1 forward, 1 aft)
Main Engines	3 diesels, speed = 35 knots

A development of the motor torpedo boat or motor gunboat type. Reported to have been launched in 1964.



OSA Type

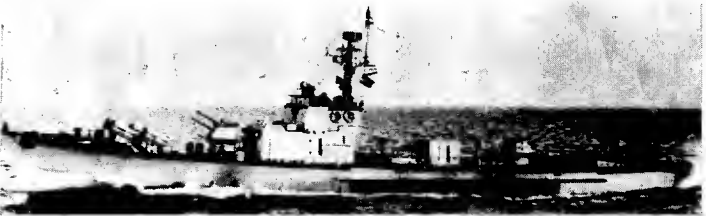
1965, Reinecke

PATROL VESSELS

14 U.S.S.R. "S.O.I." Type

ADLER	FALKE	KRANICH	REIHER
Displacement, tons	215 standard; 250 full load		
Dimensions, feet	138 pp; 147.7 oa x 20 x 10 max		
Guns	4—25 mm AA (2 twin mounts)		
A/S weapons	4 ahead throwing launchers; 2 DCT		
Main Engines	3 diesels; 3 500 bhp = 28 knots		
Complement	30		

Submarine chasers. Fitted with mine rails. Class includes Pennant Nos. 774, 811, 846, the two latest acquired in 1961 from the USSR.



No. 811

1964, courtesy Herr Werner Kähling

25 "Hai" Class

PC 1	PC 2	PC 3	PC 4
Displacement, tons	300 standard; 370 full load		
Dimensions, feet	174 pp; 187 oa x 19 x 10		
Main Engines	Diesels and gas turbines; speed 25 knots		

Submarine chasers built at Peenewerft, Wolgast. The prototype completed construction in 1963. She has two large funnels abreast. Four reported to be in service by the end of 1964. The number reported to be operational in 1965 varied between six and 24. Names and pennant numbers are very uncertain.



HAI Type

1965, Reinecke

FISHERY PROTECTION VESSELS

ROBERT KOCH

Displacement, tons	1 520
Dimensions, feet	217 oa x 32 x 14.7
Main Engines	2 diesels; 2 shafts; 1 800 bhp = 14.5 knots

Trawler type. Launched in 1955 at the Neptun Yard, Rostock, and completed at the Matthias-Thesen Yard, Wismar. Crew 44. (A new fishery protection vessel is planned at Peenewerft, Wolgast. Two small vessels are Professor Henking (ex-Neues Deutschland), and Dr Friedrich Wolf (1957), both 100 tons 14 knots).

MOTOR TORPEDO BOATS

27 Ex-U.S.S.R. "P 6" Class

101	104	107	201	204	207	301	304	307
102	105	108	202	205	208	302	305	308
103	106	109	203	206	209	303	306	309
Displacement, tons	75							
Dimensions, feet	85.3 x 20 x 6 max							
Guns	4—25 mm (2 twin mountings)							
Tubes	2—21 in							
Main Engines	4 diesels; 4 800 bhp = 43 knots max							

Interchangeable torpedo/gunboats acquired in 1957-60 from the USSR. Wooden hull.



No. 306

1965, Werner Kähling



P 6 Class

1960, Erich Gröner

12 "Forelle" Class

5-91	5-92	5-93	5-94	5-95	5-96	5-97	5-98
Displacement, tons	55						
Dimensions, feet	88.5 x 20 x 5.5						
Guns	2—25 mm AA, 4—15 mm AA						
Tubes	2—21 in						
Main Engines	2 diesels; 5 000 bhp = 40 knots						

First launched in 1956 at Schiffswerft, Rosslau. Seven more were built at Peenewerft, Wolgast. Four more are of recent construction. Not now known as "Iltis" class. The two boats of the "Seeteufel" class were deleted from the list in 1967.

9 Ex-U.S.S.R. "PA 3" Class

5-61 (ex-821)	5-63 (ex-823)	5-65 (ex-825)	5-67 (ex-827)
5-62 (ex-822)	5-64 (ex-824)	5-66 (ex-826)	5-68 (ex-828)
			5-69 (ex-829)
Displacement, tons	50		
Dimensions, feet	82 x 20 x 5.5		
Guns	4—25 mm AA		
Tubes	2—21 in		
Main Engines	Diesels; speed = 42 knots		

Built 1952-55. Purchased from USSR 1957. Fitted out by Peenewerft, Wolgast.



No. 5-61

1965, Werner Kähling

TENDERS

Sixteen auxiliary vessels service the East German Navy, including the netlayer H 42 (1955), 475 tons, 10.5 knots; and the tenders H 41 and H 43 (1957), 300 tons, 10 knots. For experimental purposes there are Rosa Luxemburg (1950) and Wilhelm Liebknecht (1951), 475 tons, 10 knots; Meteor (1956), 435 tons, 10.5 knots; and Saturn (1956), 110 tons, 9 knots. Also Alfred Merz, buoy tender; and Karl F. Gauss, coastal survey ship, all of the same seiner type.

INSHORE MINESWEEPERS

37 "Schwalbe II" Class

Displacement, tons 100 standard
Dimensions, feet 105 oa x 18 x 3.5 max
Main Engines 2 diesels; 380 bhp = 12.5 knots

Small minesweepers of medium speed built in 1955-57 at VEB Yachtwerft, Berlin.



S 344 1964, Erich Gröner

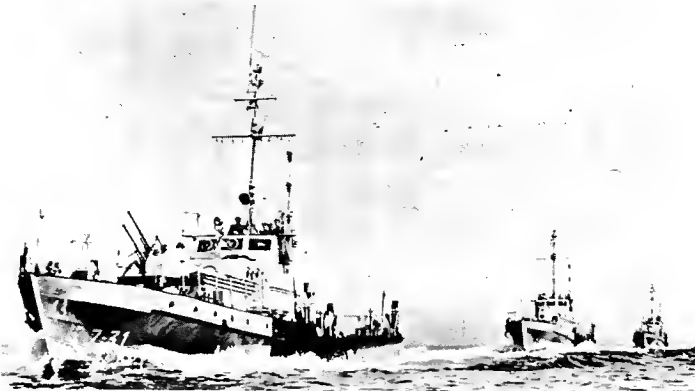
MINESWEEPING BOATS

50 "Schwalbe" Class

7-11	7-17	7-26	7-35	7-44	7-53	D 01	D 08
7-12	7-21	7-27	7-36	7-45	7-54	D 02	D 09
7-13	7-22	7-31	7-37	7-46	7-55	D 03	D 10
7-14	7-23	7-32	7-41	7-47	7-56	D 04	D 11
7-15	7-24	7-33	7-42	7-51	7-57	D 05	D 12
7-16	7-25	7-34	7-43	7-52	7-91	D 06	D 13
						D 07	D 14

Displacement, tons 50
Dimensions, feet 85.5 x 14.8 x 4.7
Guns 2—25 mm AA
Main Engines Diesels; 2 shafts; 300 bhp = 17 knots

Launched in 1954-56. D 01 to D 14 are unarmed for survey purposes.



No. 7-31 1965, Werner Kähling

LANDING CRAFT

6 "Robbe" Class

Displacement, tons 600 standard; 800 full load
Guns 2—45 mm AA (1 twin); 4—25 mm AA (2 twin)
Main Engines Speed = 12 knots

Amphibious vessels of a new type midway between the landing ship and landing craft categories. Reported to have been launched in 1963.



ROBBE 1965, Reinecke

12 "Labo" Class

No. 607
Displacement, tons 100 light; 150 standard; 200 full load
Dimensions, feet 131.2 x 28 x 6
Guns 4—25 mm AA (2 twin)
Main engines Speed = 10 knots

Landing craft of a new light type. Built by Peenewerft, Wolgast. Reported to have been launched in 1959-60 and 1961-63.

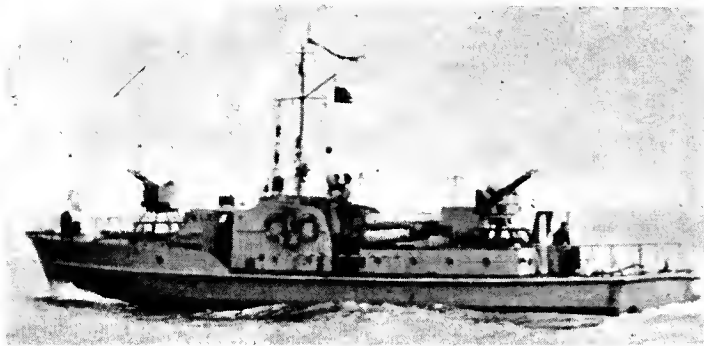
HARBOUR DEFENCE BOATS

45 "Delphin/Tummler" Class

4-11	4-21	4-31	4-41	4-91	4-97	G 311	G 323
4-12	4-22	4-32	4-42	4-92	4-98	G 312	G 324
4-13	4-23	4-33	4-43	4-93	4-99	G 313	G 331
4-14	4-24	4-34	4-44	4-94		G 314	G 332
4-15	4-25	4-35	4-45	4-95		G 321	G 333
4-16	4-26	4-36	4-46	4-96		G 322	G 384

Displacement, tons 50
Guns 2—25 mm AA or 4—15 mm AA. Also carry 4 DC
Main Engines Jumo diesels; 1 000 bhp = 25 knots

Küsten- und Reede Schutzboote (Coastal and harbour defence boats) of all metal construction. Twelve operational and remainder for training.



KRS 4-46 Added 1963, Erich Gröner

COASTAL DEFENCE BOATS

48 "Sperber" Class

3-11	3-17	3-25	3-33	3-41	3-47	G 171	G 131
3-12	3-18	3-26	3-34	3-42	3-48	G 172	G 132
3-13	3-21	3-27	3-35	3-43	G 111	G 181	G 141
3-14	3-22	3-28	3-36	3-44	G 112	G 182	G 142
3-15	3-23	3-31	3-37	3-45	G 161	G 121	G 151
3-16	3-24	3-32	3-38	3-46	G 162	G 122	G 152

Displacement, tons 3-31 to 3-38, 3-41 to 3-48, 53 standard; 73 full load;
G 121-152, 56 standard; 76 full load
Dimensions, feet 3-31 to 3-38, 3-41 to 3-48; 85.5 oa x 16 x 5
G 121-152, 96 x 16 x 5
Guns 3—15 mm AA; 10 DC
Main Engines 3 Jumo diesels; 1 800 bhp = 25 knots

All built in 1951-54. Küsten Schutzboote, G 111 to G 152 belonged to the Grenzbrigade Küste (frontier patrol). Majority used for training.

TRAINING BOATS. There are also the coastal boats *Partisan* and *Pioneer*, launched 1957, 79 tons 13 knots, rated as schulschiffe.

SURVEYING VESSELS

METEOR

Displacement, tons 465
Dimensions, feet 130.2 oa x 24 x 10
Main Engines Diesel; 400 bhp = 10.5 knots

Hydrographic vessel built in 1961 by Volkswerft Stralsund, measurement 330 tons gross.

JOHANN L. KRÜGER (1951)

HELMUT JUST (1952)

Displacement, tons 475
Dimensions, feet 128 x 24 x 11
Main Engines Diesel; 400 bhp = 10.5 knots

Built at VEB Rosslauer Shipyard, Rosslau. River Elbe. Launch dates above, 260 tons gross. Also *Jordan* and *Magnetofuge* (1954), 135 tons 10 knots, (German KFK type) *Arkona*, *Darßer Ort* and *Stubbenkammer* (1956), 55 tons, 10 knots (cutter type) and *Flaggtief* (ex-Stralsund) and *Hydrograph* (1953) 30 tons, 8 knots. *Hydrograph* is also reported as an electronic intelligence collection trawler based at Warnemuende and employed in the Baltic.

OILERS

RIEMS

Displacement, tons 1 000 full load
Dimensions, feet 195 oa x 29.5 x 12.5 max
Main Engines 2 diesels; 2 800 bhp = 14 knots

Built at Peenewerft, Wolgast, in 1960-61. Crew 26. There is also H 44.

Three new oilers were built by Matthias-Thesen -W, Wismar, 585 tons, 9 knots.

TUGS

H 35 (ex-925)	H 36 (ex-926)	H 37 (ex-927)	WISMAR (ex-Lossen)
Displacement, tons 700			
Main Engines 1 200 hp = 14 knots			

Photograph of H 36 (ex-926) appears in the 1956-57 to 1959-60 editions. Also small seagoing tugs H 12, H 32, H 34, 300 tons, 10 knots, built in 1957, icebreaking tugs *Elsbär* and *Eisvogel*, built in 1958, 1 100 hp; rescue tug built by Peenewerft, Wolgast, 1 500 tons, 14 knots.

Commander Ghana Navy:
Rear Admiral D. A. Hansen

GHANA

Personnel
600 (70 officers and 530 ratings)

CORVETTES

2 "Kromantse" Class

KROMANTSE F 17

Displacement, tons 380 light; 440 standard; 500 full load
Dimensions, feet 162 wl; 177 oa x 28.5 x 13 (props)
Guns 1—4 in, 1—40 mm AA (see notes)
A/S weapons 1 Squid triple-barrelled depth charge mortar
Main engines 2 Bristol Siddeley Maybach diesels; 2 shafts; 390 rpm;
7 100 bhp = 20 knots (5 700 hp = 18 knots sea)
Oil fuel, tons 60
Radius, miles 2 000 at 16 knots
Complement 54 (6 + 3 officers, 45 ratings)

KETA F 18

Anti-submarine vessels of a novel type designed by Vosper Ltd, Portsmouth, a joint venture with Vickers-Armstrongs, Ltd, one ship being built by each company. Comprehensively fitted with sonar, air and surface warning radar. Vosper roll damping fins, and air conditioning throughout excepting machinery spaces. Generators 360 kW. The electrical power supply is 440 volts, 60 cycles ac. The originally proposed twin 40 mm mounting was suppressed to save top weight. A very interesting patrol vessel design, an example of what can be achieved on a comparatively small platform to produce an inexpensive and quickly built anti-submarine vessel. *Kromantse* was launched by Vosper Ltd at the Camber Shipyard, Portsmouth, on 5 Sep 1963, and commissioned on 27 July 1964. *Keta* was launched at Newcastle on 18 Jan 1965, and commissioned on 4 May 1965. Photographs of *Kromantse* appear in the 1964-65 and 1965-66 editions.

RESCINDMENT. The order to Yarrow & Co Ltd, Scotstoun, Glasgow for the construction of a frigate (see full particulars and photograph of the model in the 1966-67 edition) was rescinded in 1966, but the ship was launched without ceremony or name on Clydeside on 29 Dec 1966 and is awaiting a buyer while she is being completed.



KETA

1966, Wright & Logan

COASTAL MINESWEEPERS

1 "Ton" Class

EJURA (ex-Aldington) M 16

Displacement, tons 360 standard; 425 full load
Dimensions, feet 140 pp, 153 oa x 28.8 x 8.2
Guns 1—40 mm AA forward; 2—20 mm AA aft
Main Engines Deltic diesels; 2 shafts; 3 000 bhp = 15 knots max
Oil fuel (tons) 45
Complement 27

Former Royal Navy non-magnetic type vessel. Lent to Ghana by Britain in 1964.



EJURA

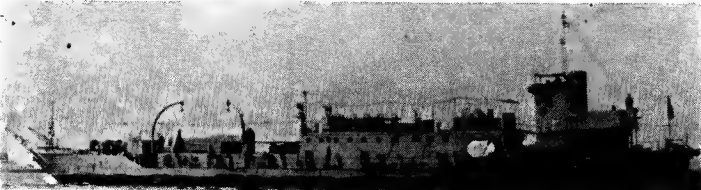
1964, Ghana Navy, Official

MAINTENANCE REPAIR CRAFT

ASUANTSI (ex-MRC 1122)

Displacement, tons 657
Dimensions, feet 225 pp; 231.3 oa x 39 x 3.3 forward, 5 aft
Main engines 4 Paxman, 1 840 bhp = 9 knots cruising

Acquired from Britain in 1965 and arrived in Ghana waters in July 1965. Used as a base workshop at Tema Naval Base. Is kept operational, and does a fair amount of seetime in general training and exercise tasks.



ASUANTSI

1966, Ghana Navy, Official

PATROL BOATS

4 U.S.S.R. Built

P 20

P 21

P 22

P 23

Displacement, tons 86 standard; 91 full load
Dimensions, feet 98 pp x 15 x 4.8
Guns, AA 2—14.5 mm (twin mounting)
Main engines 2 Model M50-3 diesels; 2 shafts; 1 600 rpm;
1 200 bhp = 18 knots
Oil fuel, tons 9.25
Radius, miles 460 at 17 knots
Complement 16 (2 officers, 14 ratings)

Built in the USSR. Completed in Aug 1963. Acquired in 1967.

INSHORE MINESWEEPERS

AFADZATO (ex-Ottringham) M 12

YOGAGA (ex-Malham) M 11

Displacement, tons 120 standard; 159 full load
Dimensions, feet 100 pp; 107.5 oa x 22 x 5.8
Guns 1—40 mm AA
Main Engines 2 Paxman diesels; 1 000 bhp = 14 knots
Oil fuel, tons 15
Complement 22

Malham, commissioned on 2 Oct 1959, and *Ottringham*, commissioned on 30 Oct 1959, sailed for Ghana on 31 Oct 1959, and were officially transferred from the Royal Navy to the Ghana Navy at Takoradi at the end of Nov 1959 and renamed after hills in Ghana. Now fitted with funnel.

A photograph of *Afadzato* appears in the 1964-65 and 1965-66 editions.



YOGAGA

1966, Ghana Navy, Official

TRAINING SHIP

ACHIMOTA (ex-Kantamento, ex-Radiant) A 15

Displacement, tons 600
Dimensions, feet 174 oa x 28 x 14
Main Engines Diesels; 2 shafts; speed = 13 knots max
Oil fuel tons 60
Complement 35 (with additional accommodation for 30)

Built in 1927 by Camper & Nicholsons, Ltd, England for the Commodore of the Royal Yacht Squadron. Converted into an anti-submarine vessel during the Second World War. After hostilities sold to the Abingdon Steamship Co Ltd, for Mediterranean cruises. Later re-engined and modernised. The Ghana Government then purchased her for use as a State Yacht. In Feb 1963 she was transferred to the Ghana Navy and converted into Training Depot Ship. She also serves as Flagship.



ACHIMOTA

1964, Ghana Navy, Official

SEAWARD DEFENCE BOATS

2 "Ford" Class

ELMINA P 13

KOMENDA P 14

Displacement, tons 120 standard; 160 full load
Dimensions, feet 100 wl; 117.5 oa x 20.5 x 5
Guns 1—40 mm, 60 cal Bofors AA
A/S weapons Depth charge throwers
Main engines 2 Davey Paxman diesels; 2 shafts; 1 000 bhp = 16.5 knots
Complement 19

Built for Ghana by Yarrow & Co Ltd, Scotstoun, Glasgow. Both laid down on 18 Oct 1961. *Komenda* was launched on 17 May 1962 and commissioned on 1 Nov 1962. *Elmina* was commissioned on 29 Nov 1962. Fitted with roll damping fins. It was officially stated in 1967 that the Foden diesel and centre shaft have been removed. A photograph of *Komenda* appears in the 1963-64 to 1965-66 editions.



ELMINA

1966, Ghana Navy, Official

ROYAL HELLENIC NAVY

Administration

Chief of the General Naval Staff:
Vice-Admiral H. Dedes, RHN

Diplomatic Representation

Naval Attaché in London:
Captain J. Athanassiou, RHN

Naval Attaché in Washington:
Captain John Stratakis, RHN

Strength of The Fleet

- 3 Submarines (Diesel Powered)
- 8 Destroyers
- 4 Frigates (Destroyer Escorts)
- 5 Escort Minesweepers (Corvettes)
- 10 Patrol Vessels
- 2 Minelayers
- 14 Coastal Minesweepers
- 6 Fast Patrol Boats (Torpedo Boats)
- 16 Landing Ships (6 Medium)
- 50 Support Ships and Service Craft

Personnel

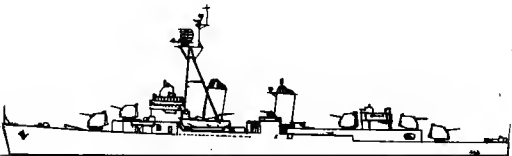
1967: 18 000 (1,800 officers and 16,200 ratings) (conscript, 18 months or enlistment)

Mercantile Marine

Lloyd's Register of Shipping:
1,497 vessels of 7,163,209 tons gross

Silhouettes

Scale: 150 feet = 1 inch



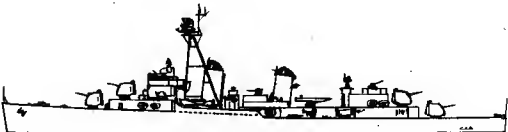
NAVARINON, THYELLA



DOXA, NIKI



AETOS, PANTHIR



ASPIS, LONCHI, SFENDONI, VELOS



IERAX, LEON



PIRPOLITIS

SUBMARINES

1 Ex-U.S. "Balao" Class

- Displacement, tons: 1 526 standard; 1 816 surface; 2 425 submerged
- Length, feet (metres): 311.5 (94.9) oa
- Beam, feet (metres): 27 (8.2)
- Draught, feet (metres): 17 (5.2)
- Torpedo tubes: 10—21 in (533 mm), 6 bow, 4 stern
- Main engines: 6 500 bhp diesels (surface); 4 610 hp electric motors (submerged)
- Speed, knots: 20 on surface, 10 submerged
- Radius, miles: 12 000 at 10 knots
- Oil fuel (tons): 300
- Complement: 80

Transferred on 26 Feb 1965 at San Francisco (loaned by US in 1964 under MAP).

Name	No.	Builders	Launched	Completed
TRIAINA (ex-USS Scabbardfish, SS 397)	S 86	Portsmouth Navy Yard	27 Jan 1944	29 Apr 1944



TRIAINA

1966, A. & J. Pavia

Name	No.
AMFITRITI (ex-Jack)	S 78 (ex-Y 17)
POSEIDON (ex-Lapon)	S 09 (ex-Y 16)

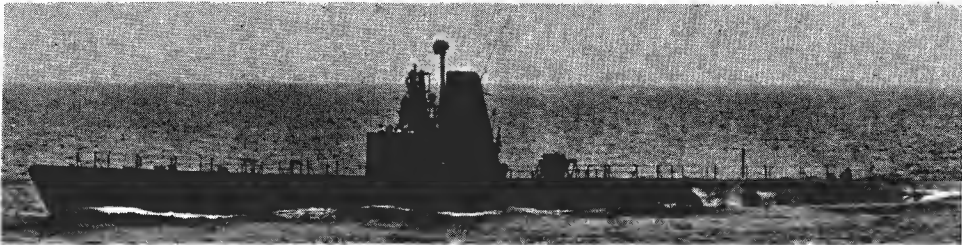
Builder	Laid down	Launched	Completed
Electric Boat Div, Gen Dynamics Corp	2 Feb 1942	16 Oct 1942	6 Jan 1943
Electric Boat Div, Gen Dynamics Corp	21 Feb 1942	27 Oct 1942	23 Jan 1943

2 Ex-U.S. "Gato" Class

- Displacement, tons: 1 525 standard; 1 816 surface; 2 425 submerged
- Length, feet (metres): 311.7 (95.0)
- Beam, feet (metres): 27 (8.2)
- Draught, feet (metres): 17 (5.2)
- Guns, dual purpose: 1—5 in (127 mm) 25 cal.
- Torpedo tubes: 10—21 in (533 mm), 6 bow, 4 stern
- Main engines: 6 500 bhp GM 2-stroke diesels (surface); 2 750 hp electric motors (submerged)
- Speed, knots: 21 on surface; 10 submerged
- Complement: 85

Both loaned from the United States in 1957 under the Military Aid Program. Have two engine rooms instead of one to reduce the size of the compartments. Lapon was transferred on 8 Aug 1957 and Jack on 21 Apr 1958.

PHOTOGRAPHS. A larger photograph of Poseidon appears in the 1964-65 and 1965-66 editions, and another photograph of Amfitriti appears in the 1959-60 to 1964-65 editions.



POSEIDON

Added 1966



AMFITRITI

Added 1966

DESTROYERS

Name	No.	Builder	Laid down	Launched	Completed
ASPIS (ex-USS <i>Conner</i> , DD 582)	D 06	Boston Navy Yard	16 Apr 1942	18 July 1942	8 June 1943
LONCHI (ex-USS <i>Hall</i> , DD 583)	D 56	Boston Navy Yard	16 Apr 1942	18 July 1942	6 July 1943
NAVARINON (ex-USS <i>Brown</i> , DD 546)	D 63	Bethlehem (S. Pedro)	27 June 1942	22 Feb 1943	10 July 1943
SFENDONI (ex-USS <i>Aulick</i> , DD 569)	D 85	Consolidated Steel Corp, Texas	14 May 1941	2 Mar 1942	27 Oct 1942
THYELLA (ex-USS <i>Bradford</i> , DD 545)	D 28	Bethlehem (S. Pedro)	28 Apr 1942	12 Dec 1942	12 June 1943
VELOS (ex-USS <i>Charette</i> , DD 581)	D 16	Boston Navy Yard	20 Feb 1941	3 June 1942	18 May 1943

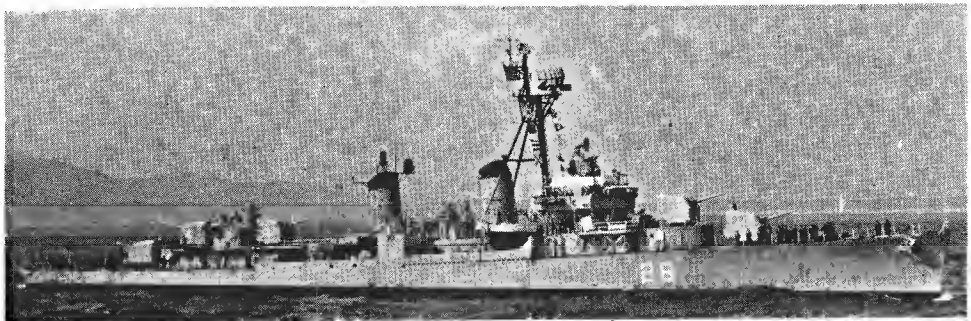
6 Ex-U.S. DD Type
"Fletcher" Class

Displacement, tons	2 100 standard; 3 050 full load
Length, feet (metres)	376.5 (114.6) oa
Beam, feet (metres)	39.5 (12.0)
Draught, feet (metres)	12.2 (3.7) mean; 18 (5.5) max
Guns, dual purpose	5—5 in (127 mm) 38 cal, in D63 and D28; 4 only in remainder
Guns, AA	10—40 mm, 2 quadruple, 1 twin, in D63, D28; 6—3 in (76 mm), 3 twin, in remainder
A/S weapons	Hedgehogs; DC's
Torpedo tubes	None in D63 and D28; 5—21 in (533 mm), quintuple bank, in others
Torpedo racks	Side-launching for A/S torpedoes
Boilers	4 Babcock & Wilcox or Foster Wheeler; 615 psi (43.3 km/cm ²) 800°F (427°C)
Main engines	2 sets GE geared turbines 60 000 shp; 2 shafts
Speed, knots	34 max
Radius, miles	6 000 at 15 knots; 1 285 at 32 knots
Oil fuel (tons)	506
Complement	300

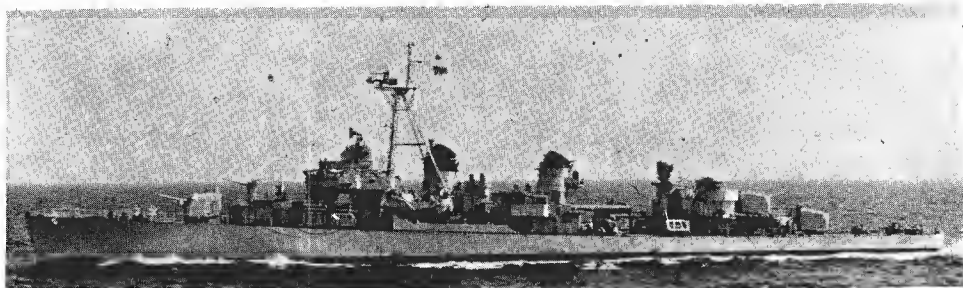
Transferred from USA to Greece under the Mutual Defence Assistance Programme, *Aspis*, *Lanchi* and *Velos* at Long Beach, California, on 15 Sep 1959, 9 Feb 1960 and 15 June 1959, respectively, *Sfendoni* at Philadelphia on 21 Aug 1959, *Navarinon* and *Thyella* at Seattle, Washington, on 27 Sep 1962. *Aspis* means Shield.

PHOTOGRAPHS of *Velos* before refit appear in the 1959-60 edition, and of *Sfendoni* after refit in the 1960-61 to 1965-66 editions.

DISPOSAL OF CRUISER
The light cruiser *Elli*, formerly the Italian *Eugenio di Savoia*, was officially deleted from the list in 1964.



THYELLA (five 5-inch guns) Royal Hellenic Navy, Official



ASPIS (four 5-inch guns) 1967, Royal Hellenic Navy, Official

Name	No.	NATO No.	Builders	Laid down	Launched	Completed
DOXA (ex-USS <i>Ludlow</i> , DD 438)	20	D 220	Bath Iron Works Corp	18 Dec 1939	11 Nov 1940	5 Mar 1941
NIKI (ex-USS <i>Eberle</i> , DD 430)	65	D 225	Bath Iron Works Corp	12 Apr 1939	14 Sep 1940	4 Dec 1940

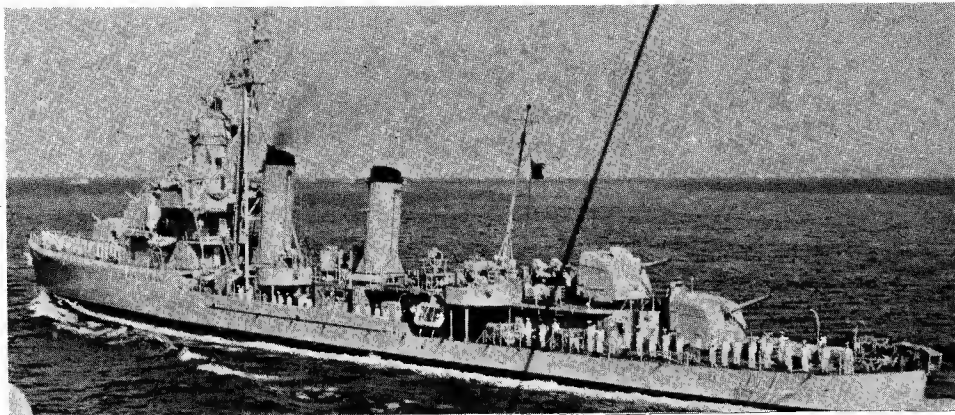
2 Ex-U.S. DD Type
"Gleaves" Class

Displacement, tons	1 630 standard; 2 572 full load
Length, feet (metres)	341 (103.9) wl; 348.2 (106.1) oa
Beam, feet (metres)	36.1 (11.0)
Draught, feet (metres)	18 (5.5) max
Guns, surface	4—5 in (127 mm), 38 cal.
Guns, AA	12—40 mm, 2 quadruple, 1 twin (see <i>Gunnery</i> notes)
A/S weapons	Hedgehogs; DC's
Torpedo tubes	Removed
Torpedo racks	Side-launching for A/S torpedoes
Boilers	4 Babcock & Wilcox; 580 psi (40.8 kg/cm ²); 850°F (455°C)
Main engines	2 sets GE geared turbines 50 000 shp; 2 shafts
Speed, knots	35 max
Radius, miles	5 000 at 15 knots; 1 564 at 30 knots
Oil fuel (tons)	440
Complement	250 (war); 188 peace

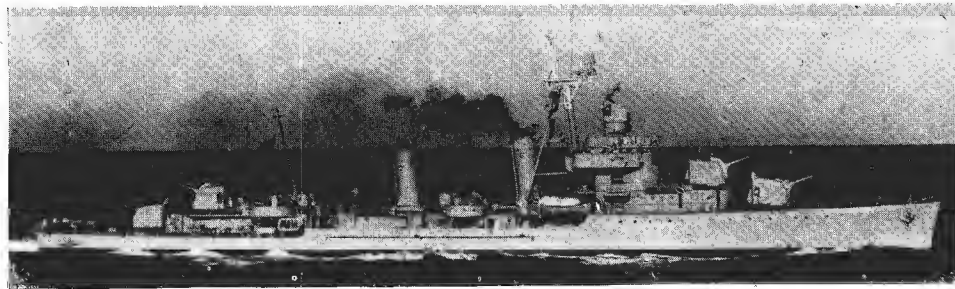
Taken over from the United States Navy on 18 Apr 1951. As modernised, now have tripod foremast. For former appearance, with pole foremast see photograph of *Niki* in the 1956-57 to 1964-65 editions. Names mean "Glory" and "Victory" respectively.

GUNNERY. The six 20 mm AA guns were removed in 1962.

TORPEDO TUBES. The 5—21 in torpedo tubes originally mounted in a quintuple bank were removed.



DOXA 1965, Royal Hellenic Navy, Official



DOXA 1964, Royal Hellenic Navy, Official

FRIGATES (Destroyer Escorts)

Name	No	NATO No.	Builders	Laid down	Launched	Completed
AETOS (ex-USS Slater, DE 766)	01	D 212	Tampa SB Co	9 Mar 1943	13 Feb 1944	1 May 1944
IERAX (ex-USS Elbert, DE 788)	31	D 213	Tampa SB Co	1 Apr 1943	23 May 1944	12 July 1944
LEON (ex-USS Eldridge, DE 173)	54	D 217	Federal SB & DD Co	22 Feb 1943	25 June 1943	27 Aug 1943
PANTHIR (ex-USS Garfield Thomas, DE 193)	67	D 227	Federal SB & DD Co	23 Sep 1943	12 Dec 1943	24 Jan 1944

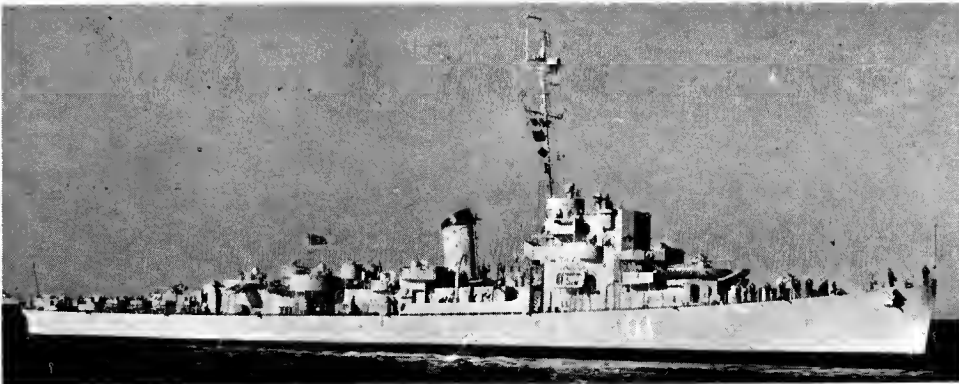
4 Ex-U.S. DE Type
"Bostwick" Class

Displacement, tons	1 240 standard ; 1 900 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	14 (4.3)
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	6—40 mm, 3 twin
	14—20 mm, 7 twin
A/S weapons	Hedgehog, 8 DCT; 1 DC rack
Torpedo racks	Side launching for A/S torpedoes
Main engines	4 sets GM diesel-electric
	6 000 bhp; 2 shafts
Speed, knots	19.25 max
Radius, miles	11 500 at 11 knots; 6 920 at 17.5 knots
Oil fuel (tons)	316
Complement	220 (war)

Aetos and Ierax were transferred on 15 Mar 1951, Leon and Panther on 15 Jan 1951. Their 3—21 inch torpedo tubes (triple mount) were removed. Meanings of names are Eagle, Falcon, Lion and Panther, respectively.

PHOTOGRAPHS of Leon appear in the 1962-63 to 1965-66 editions, and of Ierax in the 1966-67 edition.

DISPOSALS OF "HUNT" CLASSES
Of the ex-British "Hunt" Type III frigates (escort destroyers). Adrias (ex-Border), was scrapped after a mine blew away her fo'c's'le on 22 Oct 1943; Kanaris (ex-Hatherleigh) and Pindos (ex-Bolebroke) were returned to Great Britain on 12 Dec 1959 and sold for scrap in Greece, Miaoulis (ex-Modbury) was similarly disposed of in 1960; Adrios (ex-Tanatside) and Astings (ex-Catterick) were discarded in 1963 and sold by the British Admiralty.
The ex-British "Hunt" Type II frigates (escort destroyers). Aegaion (ex-Lauderdale), Kriti (ex-Hursley) and Themistocles (ex-Bramham) were returned to Great Britain on 12 Dec 1959 and sold for scrap in Greece.



AETOS

1966, A. & J. Pavia



PANTHIR

1967, Royal Hellenic Navy, Official

ESCORT MINESWEEPERS (Rated as Corvettes)

Name	No.	Builders	Launched
ARMATOLOS (ex-HMS Aries)	M 12	Toronto Shipyard	19 Sep 1942
MAHITIS (ex-HMS Postillion)	M 58	Redfern Construction Co	14 Nov 1942
NAVMACHOS (ex-HMS Lightfoot)	M 64	Redfern Construction Co	31 Aug 1942
PIRPOLITIS (ex-HMS Arcturus)	M 76	Redfern Construction Co	27 Jan 1943
POLEMISTIS (ex-HMS Gozo)	M 74	Redfern Construction Co	18 Mar 1943

5 Ex-British "Algerine" Type
Ocean Minesweepers
(Officially classed as Corvettes)

Displacement, tons	1 030 standard ; 1 325 full load
Length, feet (metres)	225 (68.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	11.5 (3.5) max
Guns, dual purpose	2—3 in (76 mm) US Mark 21
	(1 in Pirpolitis, none in Mahitis)
Guns, AA	4—20 mm (US), 2MG
A/S weapons	2 to 4 DCT
Main engines	2 triple expansion; 2 shafts;
	2 700 ihp = 16 knots max
Boilers	2 Yarrow, 250 psi (17.6 kg cm ²)
Oil fuel, tons	235
Radius, miles	5 000 at 10 knots; 2 270 at 14.5 knots
Complement	85

Acquired from the Executive Committee of surplus Allied Material. Formerly employed as corvettes. The armament of Mahitis was removed when she became a training ship. Armatolos, Mahitis and Navmachos were used as auxiliaries. All act as personnel transports.



PIRPOLITIS

1967, A. & J. Pavia

COASTAL PATROL VESSELS

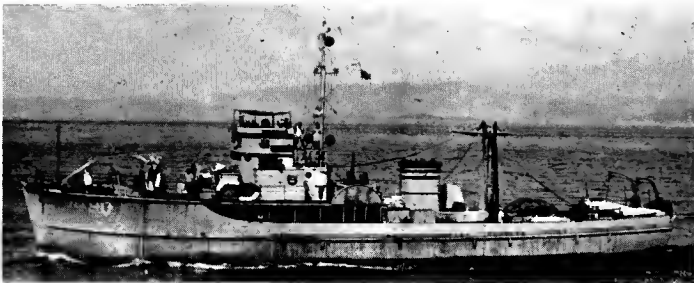
3 BYMS Type Ex-Coastal Minesweepers

LAMBADIAS (ex-BYMS 2182)	PIGASSOS (ex-BYMS 2221)
PROKYON (ex-BYMS 2076)	

Displacement, tons	251 standard; 338 full load
Dimensions, feet	136 x 24.5 x 8.5 max
Guns	1—20 mm; Oerlikon AA
Main engines	2 GM diesels; 2 shafts; 1,000 bhp = 15 knots
Oil fuel (tons)	16
Radius, miles	5 500 at economical speed
Complement	30

Former United States coastal minesweepers of the BYMS type acquired in 1959. Of wooden hull construction.

DISPOSALS
Of this class Aura (ex-BYMS 2054) was officially deleted from the list in 1962, and Andromeda (ex-BYMS 2261), Kleio (ex-BYMS 2152) and Thalia (ex-BYMS 2252) in 1967.



LAMBADIAS

1967, Royal Hellenic Navy, Official

PATROL VESSELS

ANTIPLOIARKHOS LASKOS (ex-PGM 16, ex-PC 1148)	P 53
ANTIPLOIARKHOS PEZOPOULOS (ex-PGM 21, ex-PC 1552)	P 70
PLOIARKHOS MELETOPOULUS (ex-PGM 22, ex-PC 1553)	P 67
PLOTARKHIS ARSLANOGLU (ex-PGM 25, ex-PC 1556)	P 14
PLOTARKHIS CHANTZIKONSTANDIS (ex-PGM 29, ex-PC 1565)	P 96
Displacement, tons	335 standard; 439 full load
Dimensions, feet	170 wl; 174.7 oa x 23 x 10.8 max
Guns	1—3 in; 6—20 mm AA (see <i>Gunnery</i> notes)
A/S weapons	Hedgehog; side launching torpedo racks; depth charges
Main Engines	2 GM 2 str diesels; 2 shafts; 3 600 bhp = 19 knots

All launched in 1943-44. Presented from the US Navy in Aug 1947. The two 40 mm AA guns were removed and a hedgehog was installed in 1963.

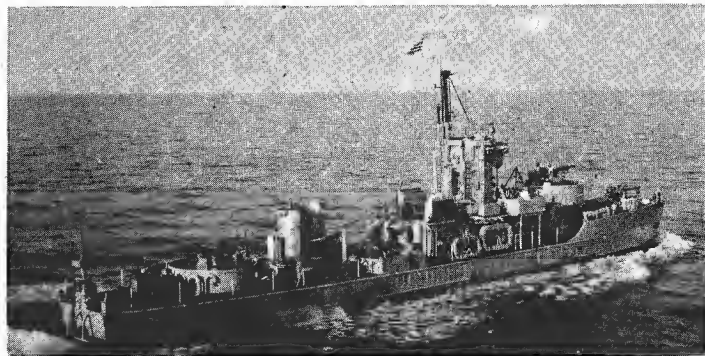
Sister ship *Plotarkhis Blessas* (ex-PGM 28, ex-PC 1559) P 61, was sold in 1963.



ANTIPLOIARKHOS PEZOPOULOS 1964, Royal Hellenic Navy, Official

PLOTARKHIS MARIDAKIS (ex-USS LSSL 65)	14 Nov 1944	P 94
PLOTARKHIS VLACHAVAS (ex-USS LSSL 35)	17 Sep 1944	P 95
Displacement, tons	257 standard; 395 full load	
Dimensions, feet	157 x 23.2 x 5.7	
Guns	1—3 in; 4—40 mm AA (2 twins); 4—20 mm AA	
Main Engines	Diesel; 2 shafts; 1 600 bhp = 14.4 knots	

Built by Albina Engine & Machinery Works Inc, Portland, Oreg, and Commercial Iron Works, Portland, respectively. *Plotarkhis Vlachavas* was transferred from USA on 12 Aug 1957 and *Plotarkhis Maridakis* in June 1958. A photograph of *Plotarkhis Vlachavas* appears in the 1963-64 to 1966-67 editions.



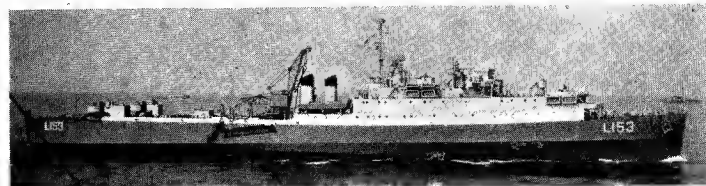
PLOTARKHIS MARIDAKIS Royal Hellenic Navy, Official

DOCK LANDING SHIP

NAFKRATOUSSA (ex-Hyperion, ex-LSD 9)

Displacement, tons	4 790 standard; 9 375 full load
Dimensions, feet	454 wl; 457.8 oa x 72.2 x 18 max
Guns	1—3 in; 8—40 mm AA
Main Engines	Geared turbines; 2 shafts; 7 000 shp = 15 knots

Launched by Newport News Shipbuilding & Dry Dock Co on 21 May 1943. Taken over by Royal Hellenic Navy in 1953. Headquarters ship of Captain, Landing Forces.



NAFKRATOUSSA 1967, Royal Hellenic Navy, Official

FAST PATROL BOATS

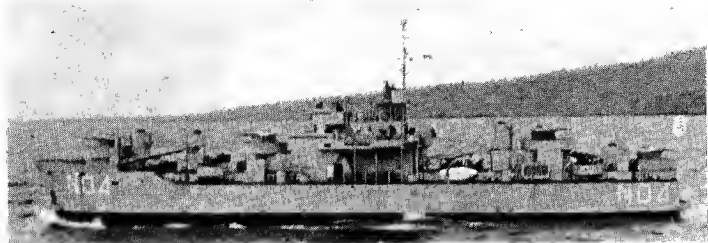
ANDROMEDA P 21	KASTOR P 23	PIGASSOS P 25
INIOHOS P 22	KYKONOS P 24	TOXOTIS P 26
Displacement, tons	69 standard; 76 full load	
Dimensions, feet	75 pp; 80.4 oa x 24.6 x 6.9	
Torpedo tubes	4—21 in	
Guns	2—40 mm AA	
Main engines	2 Napier Deltic T 18-37 K diesels; 3 100 bhp = 43 knots	
Complement	22	

Andromeda and *Iniohos* were taken over in Feb 1967 from Mandal, Norway. The second pair, *Kastor* and *Kykonos*, and the third pair, *Pigassos* and *Toxotis*, were delivered in succession within the year.

MINELAYERS

AKTION (ex-LSM 301) N 04	AMVRAKIA (ex-LSM 303) N 05
Displacement, tons	720 standard; 1 100 full load
Dimensions, feet	196.5 wl; 203.5 oa x 34.5 x 8.3 max
Guns	8—40 mm dp (4 twin); 6—20 mm AA (single)
Mines	Capacity 100 to 130
Main Engines	2 diesels; 2 shafts; 3 600 bhp = 12.5 knots
Radius, miles	3 000 at 12 knots
Complement	65

Former US Landing Ships Medium. Both built at Charleston Naval Shipyard. *Aktion* was launched on 1 Jan 1945 and *Amvrakia* on 14 Nov 1944. Converted in the USA into all purpose seagoing minelayers for the Royal Hellenic Navy under the Mutual Defence Assistance Programme. Underwent extensive rebuilding from the deck up. Twin rudders. The Greek flag was hoisted on 1 Dec 1953. A photograph of *Amvrakia* appears in the 1959-60 to 1964-65 editions.



AKTION 1965, Royal Hellenic Navy, Official

COASTAL MINESWEEPERS

AIDON (ex-MSC 310) M 248	DORIS (ex-MSC 298) M 245
AIGLI (ex-MSC 299) M 246	KICHLI (ex-MSC 308) M 241
DAPHNI (ex-MSC 307) M 247	KISSA (ex-MSC 309) M 242
Displacement, tons	320 light; 370 full load
Dimensions, feet	138 pp; 144 oa x 28 x 8.5
Guns	2—20 mm AA
Main Engines	2 General Motors diesels; 2 shafts; 880 bhp = 13 knots
Oil fuel (tons)	25
Radius, miles	2 500 at 10 knots
Complement	39

Built in the USA for Greece under the Military Aid Programme. Completed and transferred in 1964-65. Largely of wooden construction, being built throughout of materials with the lowest possible magnetic attraction to obtain the greatest possible safety factor when sweeping for magnetic mines. MSC 314 is building in USA for transfer under MAP. A photograph of *Kichli*, M 241 appears in the 1966-67 edition.

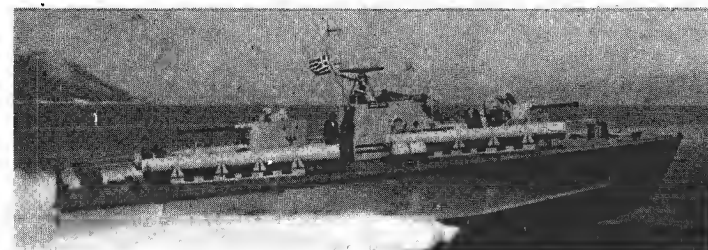


DAPHNI 1967, A. & J. Pavia

AFROESSA (ex-BYMS 2185) M 209	LEROS (ex-BYMS 2186) M 210
KALYMNOS (ex-BYMS 2033) M 201	PARALOS (ex-BYMS 2066) M 204
KARTERIA (ex-BYMS 2065) M 203	PAXI (ex-BYMS 2056) M 202
KERKYRA (ex-BYMS 2172) M 208	ZAKYNTHOS (ex-BYMS 2209) M 212

Displacement, tons	270 standard; 350 full load
Dimensions, feet	136 x 24.5 x 8
Guns	1—3 in; 2—20 mm AA; 4 MG; 2 DCT
Main Engines	Diesel; 1 000 bhp = 12 knots
Complement	33

Of wooden construction. All the names are conventional and are not mentioned in signals or correspondence. Known by numbers, *Karteria* was launched on 21 Dec 1942. *Ithaki* (ex-BYMS 2240), *Kefallinia* (ex-BYMS 2171), *Lefkas* (ex-BYMS 2086), *Patmos* (ex-BYMS 2229), *Salamina* (ex-BYMS 2067), and *Simi* (ex-BYMS 2190) were officially deleted from the list in 1966. A photograph of *Paralos* appears in the 1955-56 to 1962-63 editions, and of *Leros* in the 1963-64 to 1965-66 editions.



INIOHOS 1967, Royal Hellenic Navy, Official

TANK LANDING SHIPS

ACHELOOS
ALIAKMON L 104 (ex-LST 3002) **PINIOS** L 171 (ex-LST 3506)

Displacement, tons 2 256 standard; 4 980 full load
Dimensions, feet 330 wl; 347 oa × 55 × 14.5 max
Guns 10—20 mm AA
Main Engines Triple expansion; 2 shafts; 5 500 bhp = 13 knots
Oil fuel (tons) 1 950

Original LST (3) type landing ships. Launched in 1943. On loan from Great Britain. *Alfios* (ex-LST 3020), *Axios* (ex-LST 3007) and *Strymon* (ex-LST 3502) were returned to the Royal Navy, refitted at Malta and taken over by the Ministry of Transport. *Acheoos* (ex-LST 2503) was replaced in 1964 by an LST of the same name.



PINIOS 1966, A & J. Pavia

IKARIA (ex-USS *Potter County*, LST 1086) L 154
LESBOS (ex-USS *Boone County*, LST 389) L 172
RODOS (ex-USS *Bowman County*, LST 391) L 157
SYROS (ex-USS LST 325) L 144

Displacement, tons 1 653 standard; 4 080 full load
Dimensions, feet 316 wl; 328 oa × 50 × 14 max
Guns 8—40 mm AA; 6—20 mm AA; (*Rodos*: 10—40 mm)
Main Engines GM diesels; 2 shafts; 1 700 bhp = 11.6 knots
Complement 119 (accommodation for 266)

Former United States tank landing ships. *Ikaria*, *Lesbos* and *Rodos* were transferred to the Royal Hellenic Navy on 9 Aug 1960. *Syros* was transferred on 29 May 1964 at Portsmouth, Virginia; under MAP. Cargo capacity 2 100 tons.



LESBOS 1966, A & J. Pavia

CHIOS L 195 (ex-LST 35) **LIMNOS** L 158 (ex-LST 36) **SAMOS** L 179 (ex-LST 33)

Displacement, tons 1 625 standard; 4 080 full load
Dimensions, feet 316 wl; 328 oa × 50 × 14 max
Guns 1—3 in; 6—20 mm AA
Main Engines Diesel; 2 shafts; 1 700 bhp = 11 knots
Oil fuel (tons) 595
Complement 119

All launched in 1943. Acquired from the US Navy in 1943, on Lend-lease terms. *Lesvos* (ex-LST 322) was returned to the British Government in 1953. A photograph of *Chios* appears in the 1952-53 to 1960-61 editions.

MEDIUM LANDING SHIPS

IPOPLIARKHOS CRYSTALIDIS (ex-USS *LSM* 541) L 165
IPOPLIARKHOS DANILOLOS (ex-USS *LSM* 227) L 163
IPOPLIARKHOS GRIGORPOULOS (ex-USS *LSM* 45) L 161
IPOPLIARKHOS MERLIN (ex-USS *LSM* 577) L 166
IPOPLIARKHOS ROUSSEN (ex-USS *LSM* 399) L 164
IPOPLIARKHOS TOURNAS (ex-USS *LSM* 102) L 162

Displacement, tons 743 beaching; 1 095 full load
Dimensions, feet 196.5 wl; 203.5 oa × 34.2 × 8.3
Guns 2—40 mm AA; 8—20 mm AA
Main Engines Diesel direct drive; 2 shafts; 3 600 bhp = 13 knots

Former United States Medium Landing Ships. *LSM* 541 and *LSM* 557 were handed over to the Royal Hellenic Navy at Salamis on 30 Oct 1958. *LSM* 45, *LSM* 102, *LSM* 227 and *LSM* 399 were transferred to Greece at Portsmouth, Virginia on 3 Nov 1958. All were renamed after naval heroes killed during the Second World War.



IPOPLIARKHOS GRIGORPOULOS 1967, Royal Hellenic Navy, Official

MINESWEEPER DEPOT SHIP

HERMES (ex-*Product*, ex-*Port Jackson*) A 324

Displacement, tons 550 standard; 650 full load
Dimensions, feet 133 × 27.8 × 11
Main Engines Diesel; 4-stroke; 560 bhp = 11 knots

Former British trawler. Launched on 1941. On loan from Great Britain.



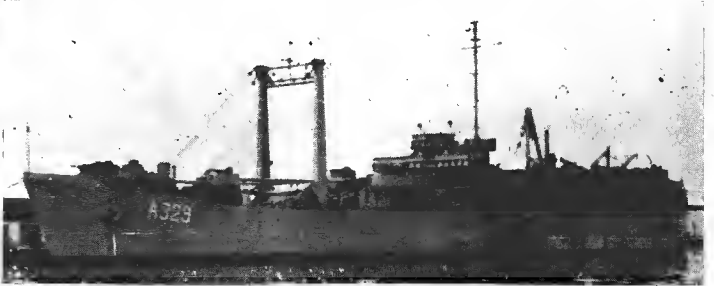
HERMES 1963, A. & J. Pavia

REPAIR SHIP

SAKIPIS (ex-*KNM Ellida*, ex-USS *ARB* 13, ex-USS LST 50) A 329

Displacement, tons 3 800 standard; 5 000 full load
Dimensions, feet 316 wl; 328 oa × 50 × 11 max
Guns 12—40 mm AA; 12—20 mm AA
Main Engines GM diesels; 2 shafts; 1 800 bhp = 10 knots
Complement 200

Former US tank landing ship. Built by Dravo Corporation, Pittsburgh. Laid down on 29 Aug 1943, launched on 16 Oct 1943, completed on 27 Nov 1943. Converted to a battle damage repair ship in 1952 by Puget Sound Bridge & Dry Dock Co. Taken over by the Royal Norwegian Navy at Seattle on 14 Nov 1952 to serve as a battle damage repair ship for surface vessels. Returned to the US Navy on 1 July 1960. Transferred to Greece on 16 Sep 1960 at Bergen, Norway.



SAKIPIS 1962, Royal Hellenic Navy, Official

LANDING CRAFT

LCU 763 **LCU 827** **LCU 971** **LCU 1379**
LCU 766 **LCU 852** **LCU 1229** **LCU 1382**

Displacement, tons 143 standard; 309 full load
Dimensions, feet 105 wl; 119 oa × 32.7 × 5 max
Guns 2—20 mm AA
Main Engines Diesel; 3 shafts; 440 bhp = 8 knots
Complement 13

Former US Utility Landing craft of the LCU (ex-LST (6)) type. *Sciathos* and *Scopelos* were acquired in 1959. *Kea*, *Kitnos* and *Sifnos* were transferred from USA in 1961, and three more in 1962. These LCUs are referred to by their hull numbers and not by name.

MINOR LANDING CRAFT. There are also 13 LCMs and 34 LCVPs, all transferred from the United States.

AIR-SEA RESCUE BOATS

ADAMIDIS A/N 705 (ex-AVR 705) **IRA** A/N 709 (ex-AVR 709)
IOS A/N 1084 (ex-AVR 1084) **KARNAVIAS** A/N 707 (ex-AVR 707)
 SAKELLARIOU A/N 708 (ex-AVR 708)

Displacement, tons 24
Dimensions, feet 63 × 15 × 3.5
Main Engines 2 Hall Scott motors; 1 260 bhp = 33 knots

These boats may be discarded in the near future it is officially stated.

SURVEY CRAFT

ARIADNE (ex-BYMS 2058) **VEGAS** (ex-BYMS 2078)

Displacement, tons 252 standard; 325 full load
Dimensions, feet 136 × 24.5 × 6
Main Engines Diesel; 1 000 bhp = 12 knots

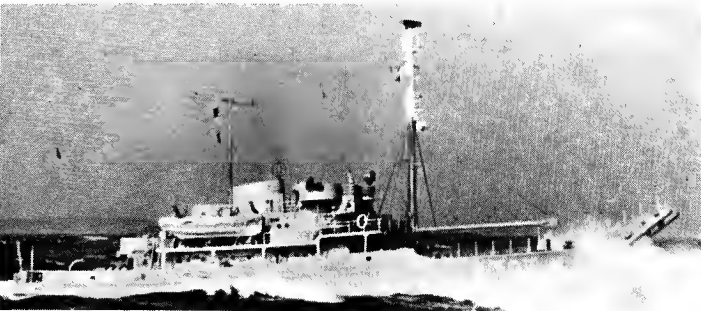
Former coastal minesweepers of the wooden hulled 8YMS type, see sister craft on previous page. The survey craft *Alykoni* was discarded in 1961.

BOOM DEFENCE VESSELS

THETIS (ex-USS AN 103) A 307

Displacement, tons	680 standard; 805 full load
Dimensions, feet	146 wl; 169.5 oa x 33.5 x 11.8 max
Guns	1—40 mm AA; 4—20 mm AA
Main engines	MAN diesels; 1 shaft; 1 400 bhp = 12 knots
Complement	48

Netlayer of the US type. Built by Kröger, Rendsburg, as a US offshore order. Launched in 1959. Taken over by the Royal Hellenic Navy on 9 Apr 1960.



THETIS

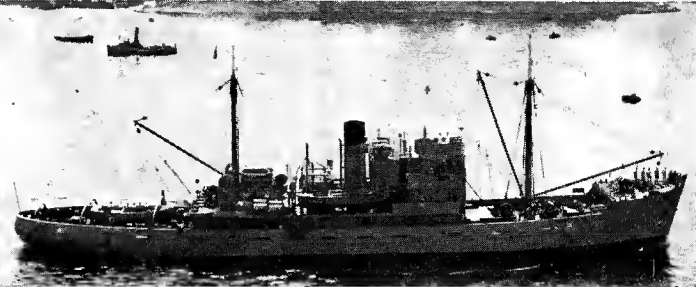
Royal Hellenic Navy, Official

OCEAN SALVAGE VESSEL

SOTIR (ex-Salventure) A 384

Displacement, tons	1,440 standard; 1 700 full load
Measurement, tons	1 112 gross
Dimensions, feet	216 oa x 37.8 x 13 max
Main Engines	Triple expansion; 2 shafts; 1 500 ihp = 12 knots
Oil fuel (tons)	310
Complement	60

Former British Royal Fleet Auxiliary ocean salvage vessel of the "Salv" class. On loan from Great Britain. Equipped with a decompression chamber.



SOTIR

A. & J. Pavia

LIGHTHOUSE TENDERS

ST LYKODIS (ex-Chania, ex-HMS Nasturtium) A 481

Displacement, tons	1 020 standard; 1,280 full load
Dimensions, feet	190 pp; 205 oa x 33 x 14.5
Main Engines	Triple expansion; 2 750 ihp = 14 knots
Boilers	2 SE
Oil fuel (tons)	230

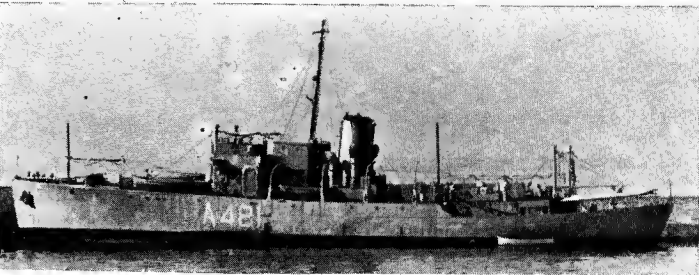
Former corvette of the British "Flower" type. Launched in 1940. Sold to Greece as a merchant ship in 1948.

SKYROS A 485

SERRAI (ex-Anna Raeder) A 487

Displacement, tons	350
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Displacement, tons	725
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ST. LYKODIS

1962, Captain Aldo Fraccaroli

WATER CARRIERS

ILIKI

Capacity, tons	120
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KASTORIA

Capacity, tons	520
----------------	-----

VOLVI

Capacity, tons	350
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TRIHONIS

Capacity, tons	300
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KALIROE

Capacity, tons	120
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STYMPHALIA

OILERS

ARETHOUSA (ex-USS Natchaug, AOG 54) A 377

Displacement, tons	1 850 light; 4 335 full load
Measurement, tons	2 575 deadweight; cargo capacity 2 040
Dimensions, feet	292 wl; 310.8 oa x 48.5 x 15.7 max
Guns	4—3 in dp; 50 cal
Main engines	GM diesels; 2 shafts; 3 300 bhp = 14 knots
Complement	43 (6 officers, 37 men)

Former US petrol carrier. Built by Cargill Inc. Savage, Minn. Laid down on 15 Aug 1944. Launched on 6 Dec 1944. Transferred from the USA to Greece under the Mutual Defense Assistance Program at Pearl Harbour, Hawaii, in July 1959.



ARETHOUSA

1966, A. & J. Pavia

ZEUS (ex-YOG 98) A 372

Dimensions, feet	165 x 35 x 10
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Former US yard petrol carrier. Launched in 1944. Capacity 900 tons.

SIROIOS (ex-Poseidon, ex-Empire Faun) A 345

Formerly on loan from Great Britain, but purchased outright in 1962. This ship was renamed *Siroios* when the name *Poseidon* was given to the submarine *Lapon* acquired from the USA in 1958 (see earlier page). Capacity 850 tons.

VIVIIS A 471

Originally a water carrier but now employed as an oiler. Capacity 687 tons.

PROMETHEUS A 374

Small yard oil tanker. Launched in 1959. Capacity 520 tons.

KRONOS (ex-Islay, ex-Dresden) A 373

Displacement, tons	311
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Capacity 110 tons. *Khalki* and *Xanthi* were officially stricken from the list in 1958.

ORION (ex-US tanker Y 126) A 376

Formerly small United States yard tanker. Capacity 700 tons.

FLEET TUGS

ACCHILEUS (ex-Confident)

AEGEVS

AIAS

ANTAIOI (ex-Busy)

ATLAS (ex-F 5)

CYCLOPS (ex-F 10)

CIGAS

KENTRAVROS

MINOTAVROS

(ex-Theseus, ex-ST 539)

PERSEUS (ex-ST772)

ROMAEOI

TITAN

SAMSON (ex-F 16)

Heraklis was officially deleted from the list in 1966.

GABOON
PATROL BOAT

BOUET-WILLAUMEZ (ex-VP 775, ex-VP 25, ex-HDML 1021)

Displacement, tons	40 standard; 52 full load
Dimensions, feet	72 oa x 15.2 x 6
Guns	2—20 mm AA; 2 MG
Main Engines	2 diesels; 2 shafts; 300 bhp = 12 knots

Former French vedette de port, ex-British harbour defence motor launch, transferred from the French Navy to Gaboon in 1961. Named after the Admiral who signed the first Franco-Gabonese Treaty. To be paid off by the end of 1967.



BOUET-WILLAUMEZ

1964, Gabonese Armed Forces, Official

GUINEA

A small naval force of coastal and river craft is being established.

GUATEMALA

ESTABLISHMENT

On 5th Jan 1959 Guatemala announced the establishment of a navy, with the primary duty of routing poaching fishing boats and smugglers. In addition to the patrol vessel below there are four small patrol craft (ex-US 40 ft coastguard cutters). A 63 ft aircraft rescue boat (AVR) was transferred from the US to Guatemala on 8 Oct 1964. Personnel: 85 officers and men.

PATROL VESSEL

JOSÉ FRANCISCO BARRUNDIA (ex-Snapphanen)

Displacement, tons	310 standard; 370 full load
Dimensions, feet	170·8 × 19·8 × 9·2
Guns	2—3 in; 2—25 mm AA
Main Engines	De Laval geared turbines; 2 shafts; 3 600 shp = 23 knots
Boilers	2 Vancon-Normand
Oil fuel (tons)	50
Complement	40

Built by Karlskrona Dockyard. Launched on 2 Nov 1933. Former minesweeper in the Royal Swedish Navy until 1959 when she was transferred to the new Guatemalan Navy as the first warship. Now has lower mast (lattice), bridge end funnel (squat, thicker and streamlined) and shields on her 12-pounder guns. One of the 25 mm guns was moved aft. She is painted a very light grey, nearly white. In 1964 she was reported to be inoperative.



JOSÉ FRANCISCO BARRUNDIA

1959, Official

HUNGARY

RIVER PATROL VESSELS

BAYA (ex-Barsch)

Displacement, tons	140
Dimensions, feet	149·2 × 19·5 × 3·2
Guns	2—70 mm; 2 MG
Main Engines	AEG turbines; 2 shafts; 1 200 shp = 15 knots
Boilers	2 Yarrow
Oil fuel (tons)	18
Complement	44

Built at the Genz-Danubius Yard, Budapest, and launched in 1918. Her screws work in tunnels.

PATROL LAUNCHES. Ten patrol launches of 100 tons displacement were reported to be in service.

DEPOT SHIP

CSOBANC

Displacement, tons	305
Dimensions, feet	132 × 18 × 4·5
Main Engines	2 Diesels; Tunnel screws; 180 bhp = 8 knots
Oil fuel (tons)	8
Complement	18

Built at the Ganz-Danubius Yard, Budapest, and launched in 1928. Employed as a transport, maintenance vessel and supply ship.

TRAINING SHIP

BADASCONY

Displacement, tons	225
Main Engines	400 hp = 10·5 knots

RIVER MINESWEEPERS

Displacement, tons	12
Guns	2 MG (can also carry 8 mines)
Main Engines	2 diesels; 75 bhp

Ten river minesweepers armoured with 8 mm plating (photograph in the 1957-58 to 1960-61 editions) have been reported. They can sweep or lay mines.

MINESWEEPING LAUNCHES. Two small minesweepers of 70 tons displacement were reported to be in service.

HAITI

COAST GUARD PATROL VESSELS

DESSALINES (ex-USN Tonawanda, AN 89) GC 10

Displacement, tons	650 standard; 785 full load
Dimensions, feet	168·5 × 33 × 10·8
Main Engines	Busch-Sulzer diesel-electric; 1 500 shp = 12 knots

Former United States Navy netlayer of the "Cohoes" class. Built by Leatham D. Smith S.B. Co. Launched on 14 Nov 1944. Loaned to Haiti in 1960 for five years.

LA CRETE A PIERROT (ex-USCG 95315) GC 8

VERTIERES GC 9

Displacement, tons	100
Dimensions, feet	95 × 19 × 5
Guns	1—40 mm AA
Main Engines	4 diesels; 2 shafts; 2 200 bhp = 21 knots
Radius, miles	1 500
Complement	15

Former US Coast Guard steel cutters. Built at US Coast Guard Yard, Curtis Bay, Maryland. La Crete a Pierrot was acquired on 26 Feb 1956. Vertieres was transferred to Haiti at Norfolk, Virginia, in Oct 1956 and commissioned in Dec 1956.

AMIRAL KILICK (ex-USCG Black Rock, WAGL 367) GC 7

Displacement, tons	160
Dimensions, feet	Length 114

Former buoy tender purchased from the US Coast Guard in 1955, commissioned in Jan 1956. A photograph appears in the 1957-58 to 1963-64 editions.

16 AOUT 1946 (ex-SC 453) GC 2

Displacement, tons	110 standard; 138 full load
Dimensions, feet	110·5 × 18·8 × 6·5
Guns	2—40 mm; 2—20 mm
Main Engines	Diesels; 2 shafts; 1 000 bhp = 15 knots

Submarine chaser of the SC type acquired during 1947 from the US Navy. Launched in 1943. Laid up in reserve. Amiral Killick, GC 4, was discarded in 1954. Toussaint L'Ouverture (ex-SC 1064) was sold in 1959.

SAVANNAH GC 1

Displacement, tons	47
Dimensions, feet	83 × 16 × 4·2
Main Engines	Diesels; 2 shafts; 200 bhp = 9 knots
Complement	12

Ex-USCG cutter 56200, built in the USA in 1944 and acquired in 1944.

ARTIBONITE (ex-US LCT) GC 5

Displacement, tons	134 standard; 285 full load
Dimensions, feet	120·3 aa × 32 × 4·2
Main Engines	3 diesels; 675 bhp = 8 knots
Complement	12

Former US tank landing craft. Salvaged by Haitian Coast Guard after grounding and converted. Laid up in reserve having been damaged by grounding in Mar 1956. Vertieres GC 6 (ex-US APC 92) was lost at sea.

SANS SOUCI (ex-Captain James Taylor)

Displacement, tons	161
Main Engines	Diesels; 2 shafts; 300 bhp = 10 knots

Employed, when required, as the Presidential Yacht.

HONG KONG

DISESTABLISHMENT. It was officially stated by the Commanding officer, Hong Kong RNR that the Hong Kong Royal Naval Reserve was disbanded, effective 1 Apr 1967. The inshore minesweepers Cardinham, M 2615, and Etchingham, M 2625, were paid off for return to the Royal Navy and disposal. The Hong Kong RNR Depot Ship, HMS Cornflower, MVF 197, was put at the disposal of the Hong Kong Government. The 180 personnel of the Hong Kong RNR comprising 42 officers and 138 ratings were also disbanded.

HONDURAS

Coast Guard

A frigate was adapted for mercantile use. There are three small coastguard cutters.

Mercantile Marine

Lloyd's Register of Shipping: 43 vessels of 69,816 tons gross

ICELAND

Administration

Minister of Justice
Mr. Johann Hafstein

Director, Coast Guard Service:
Mr. Petur Sigurdsson

Deputy Director, Coast Guard Service:
Mr. Gunnar Bergsteinnsson

The Coast Guard Service (Landhelgisgæzlan) deals with fishery protection, salvage, hydrographic research and surveying.

Strength of the Coast Guard

5 Patrol Vessels; Prefix: v/s; colour: dark grey.

Mercantile Marine

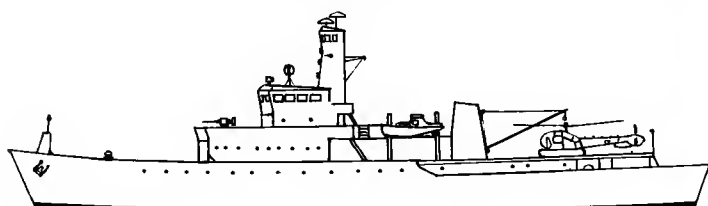
Lloyd's Register of Shipping:
260 vessels of 133,916 tons gross

COAST GUARD PATROL VESSELS

1 New Construction

Displacement, tons circa 1 000
Dimensions, feet 204 × 33 × 13 (officially revised figures)
Guns 1—57 mm
Main Engines 2 diesels; 2 shafts; 8 000 bhp = 19 knots
Complement 26

It was officially stated in Feb 1965 that this new coast guard vessel was in the planning stage. She is the first new construction project for the Icelandic Coast Guard Service for about eight years. Laid down in May 1967.



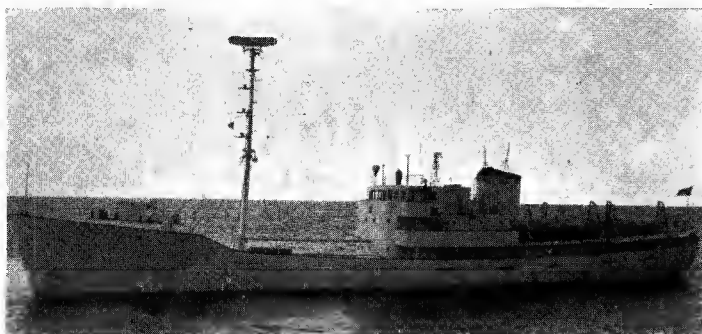
NEW PATROL VESSEL

1967, From Official Drawing

THOR

Displacement, tons 920
Measurement 693 gross
Dimensions, feet 183.3 pp; 206 oa × 31.2 × 13
Guns 1—57 mm
Main Engines 2 Crossley diesels; 3 200 bhp = 17 knots
Complement 24

Built at Aalborg, Denmark. Launched in 1951. Completed and commissioned in late 1951. Rated as coastal inspection and salvage vessel.



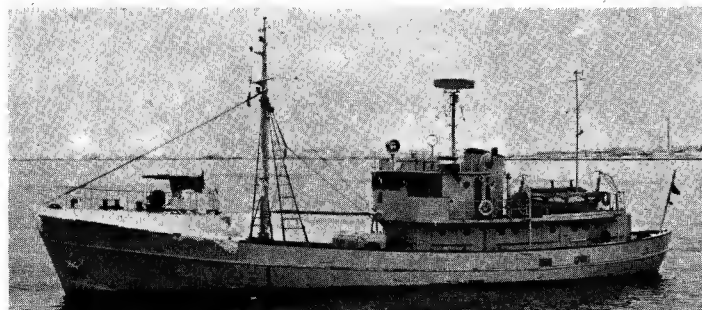
THOR

1963, Icelandic Coast Guard Service, Official

MARI JULIA

Measurement, tons 138 gross
Dimensions, feet Length: 90
Guns 1—47 mm
Main Engines Petters diesel; 470 bhp = 11.5 knots
Complement 12

Built at Frederikssund, Denmark. Launched in 1950. Also used for inshore fishery and hydrographic research.



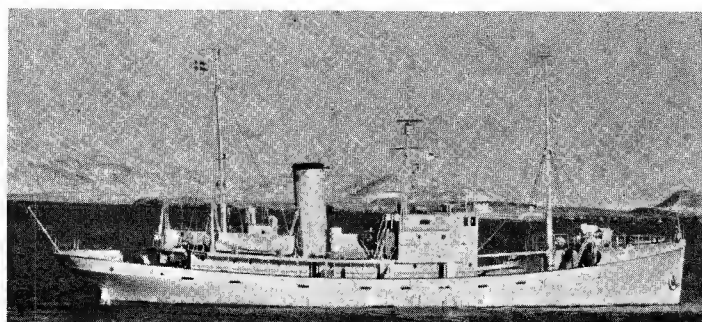
MARIA JULIA

1967, Icelandic Coast Guard Service, Official

ÆGIR

Displacement, tons 507 gross
Dimensions, feet 171.5 pp; 187 oa × 29.5 × 14.5
Guns 1—57 mm
Main Engines B & W diesels; 1 300 bhp = 13.5 knots
Complement 25

Built by Burmeister & Wain, Copenhagen. Launched on 25 Apr 1929. Rebuilt in 1953. Also used as Research Vessel for offshore and hydrographic research.



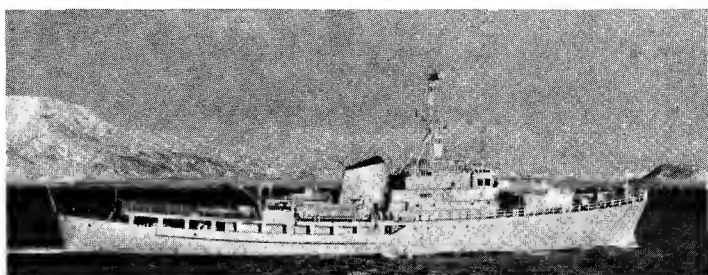
ÆGIR

1967, Icelandic Coast Guard Service, Official

ODINN

Measurements, tons 1 000
Dimensions, feet 200 wl; 207 oa × 31 × 18.5
Guns 1—57 mm
Main Engines 2 diesels; 2 shafts; 5 000 bhp = 18 knots
Complement 30

Designed as a coast guard vessel. Built at Aalborg Vaerft A/S, Denmark. Laid down in Jan 1959. Launched in Sep 1959. Completed in Jan 1960.



ODINN

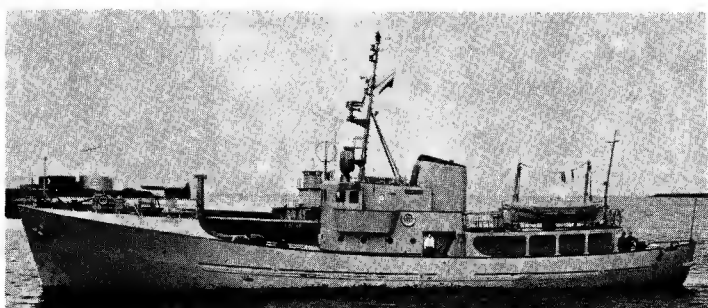
1967, Icelandic Coast Guard Service, Official

ALBERT

Measurement, tons 200 gross
Dimensions, feet Length: 111.2
Guns 1—47 mm
Main Engines 1 Nohab diesel; 650 bhp = 12.5 knots
Complement 15

Launched in 1956. Completed and commissioned for service in Apr 1957.

Hermadur foundered on 17 Feb 1959. *Gautur* (ex-*Odinn*) was officially deleted from the list on 1 Jan 1963, *Tyr* in 1964, and *Sæbjorg* in Aug 1965.



ALBERT

1967, Icelandic Coast Guard Service, Official

INDIA

Administration

Chief of the Navy Staff:
Vice-Admiral Adhar Kumar Chatterji

Flag Officer Commanding Indian Fleet:
Rear-Admiral Sardarlal Mathradas Nanda

Flag Officer, Bombay:
Rear-Admiral Reginald Sherring David

Diplomatic Representation

Naval Adviser in London:
Commodore Khushru Kaikobad Sanjana

Naval Attaché in Washington:
Captain Rabindra Nath Batra

Strength of the Fleet

- 1 Aircraft Carrier
- 4 Submarines (Diesel Powered)
- 2 Cruisers
- 3 Destroyers
- 14 Frigates
- 4 Survey Ships (3 ex-Frigates)
- 1 Ocean Minesweeper
- 4 Coastal Minesweepers
- 2 Inshore Minesweepers
- 15 Patrol Craft (Seaward Defence)
- 14 Support Ships and Service Craft

Naval Bases

Calcutta, Cochin and Madras

Naval Establishments

Bombay, Goa, Jamnagar, Lonavla, Vizagapatam

Personnel

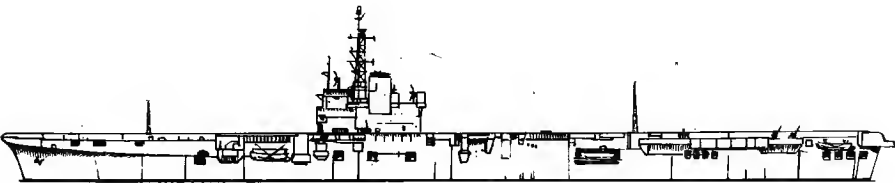
1967: 20,000 (1,800 officers, 18,200 ratings)

Mercantile Marine

Lloyd's Register of Shipping
360 vessels of 1,794,554 tons gross

Silhouettes

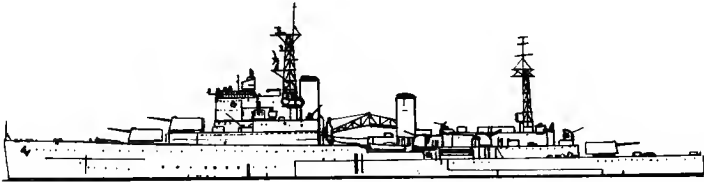
Scale: 150 feet = 1 inch



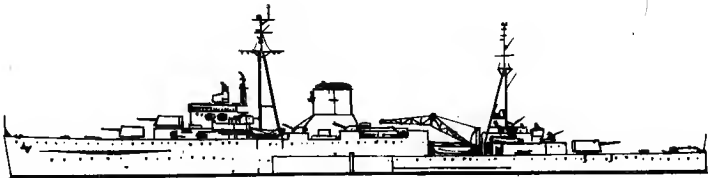
VIKRANT



DARSHAK



MYSORE



DELHI



RANA, RAJPUT, RANJIT



KHUKRI, KIRPAN, KUTHAR



JUMNA, SUTLEJ



TALWAR, TRISHUL



GANGA, GODAVARI, GOMATI



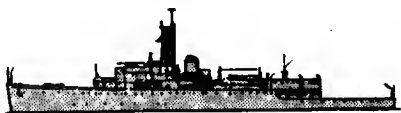
TIR



BEAS, BETWA, BRAHMAPUTRA



CAUVERY, KISTNA



INVESTIGATOR

AIRCRAFT CARRIER

Name	No.	Builders	Engineers	Laid down	Launched	Completed
VIKRANT (ex-HMS <i>Hercules</i>)	R 11	Vickers-Armstrong Ltd, Tyne	Parsons Marine Steam Turbine Co	14 Oct 1943	22 Sep 1945	4 Mar 1961

1 Ex-British "Majestic" Class

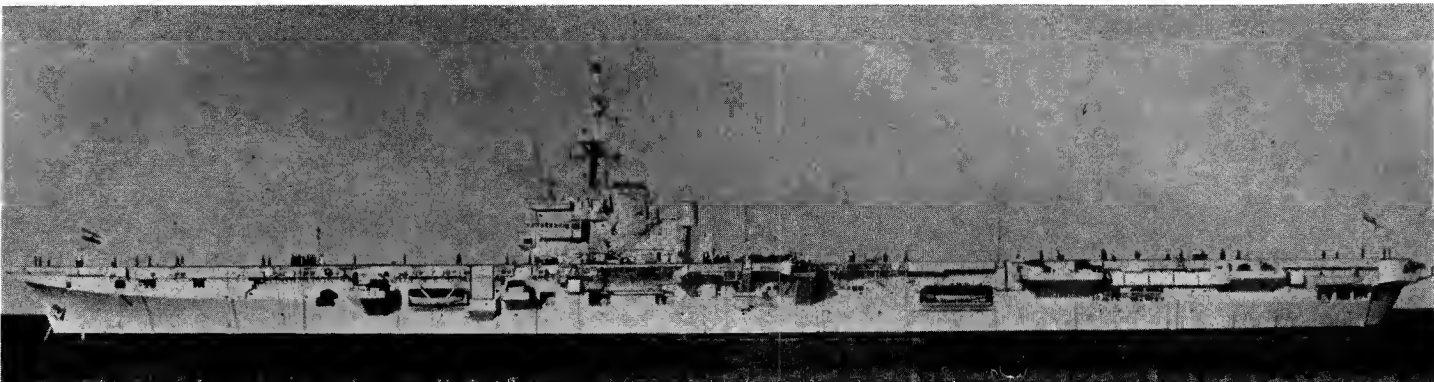
Displacement, tons	16 000 standard; 19 500 full load
Length, feet (metres)	630 (192.0) pp; 700 (213.4) oa
Beam, feet (metres)	80 (24.4) hull
Width, feet (metres)	128 (39.0)
Draught, feet (metres)	24 (7.3)
Aircraft	21 capacity
Guns, AA	15-40 mm, 4 twin, 7 single
Boilers	4 Admiralty 3-drum; 400 psi; 700°F
Main engines	Parsons single reduction geared turbines; 40 000 shp; 2 shafts
Speed, knots	24.5 designed
Complement	1 343, designed accommodation

Acquired from Great Britain in Jan 1957 after having been suspended in May 1946 when structurally almost complete and 75% fitted out. Taken in hand by Harland & Wolff Ltd, Belfast, in Apr. 1957 for completion in 1961 when she was commissioned on 4 Mar and renamed *Vikrant*.

HABITABILITY. Partially air-conditioned and insulated for tropical service, the ship's sides being sprayed with asbestos cement instead of being lagged. Separate messes and dining halls.

ENGINEERING. Engines and boilers are arranged *en echelon*, one set of turbines and two boilers being installed side by side in each of the two propelling machinery spaces, on the unit system, so that the starboard propeller shaft is longer than the port.

FLIGHT DECK. The aircraft, including 10 Seahawk strike, 2 Alouette, and 4 Breguet Alize anti-submarine aircraft, operate from an angled deck, with steam catapult, landing sights and two electrically operated lifts.

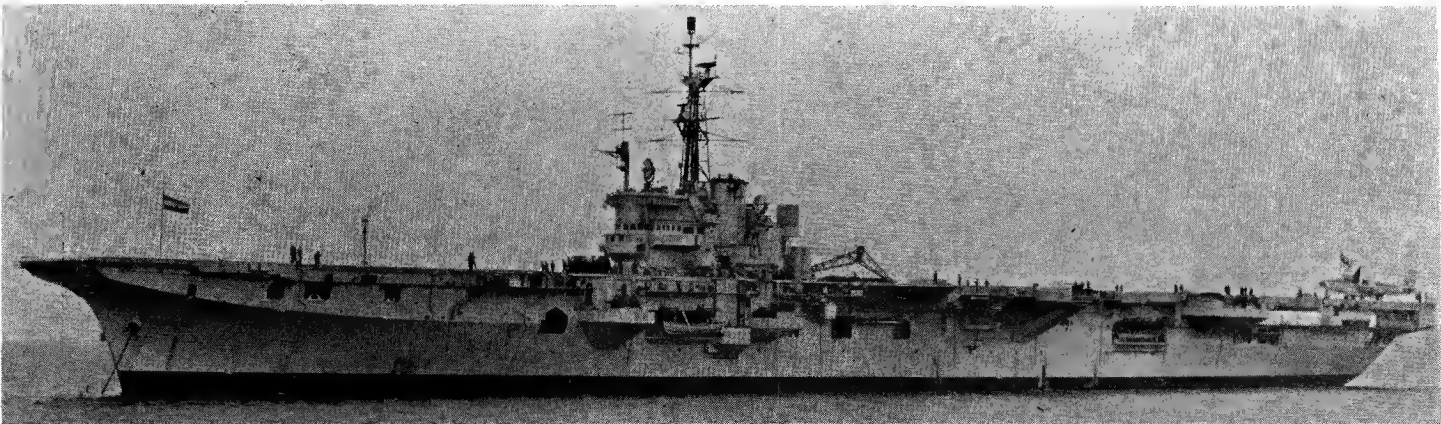
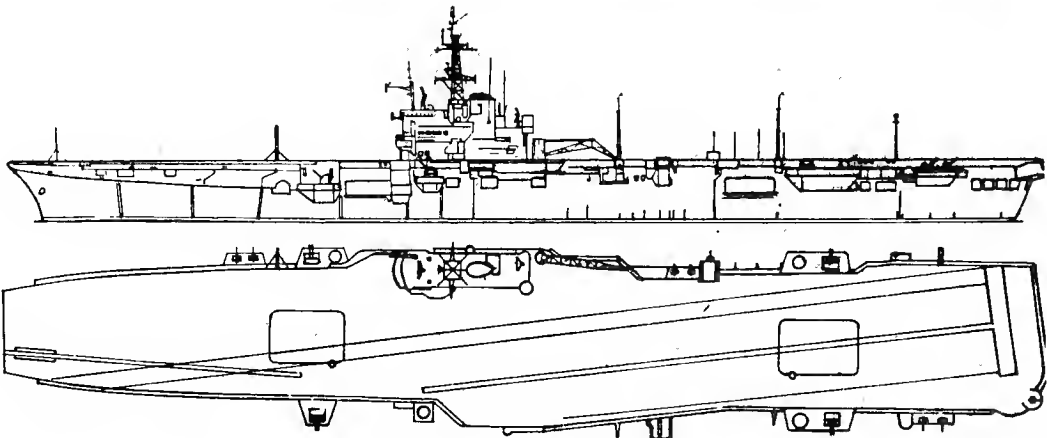


VIKRANT

courtesy Godfrey H. Walker, Esq

CLASS. Originally a sister ship of *Leviathan* (structurally almost finished and 80 per cent fitted out but never wholly completed) and *Magnificent* (which served in the Royal Canadian Navy 1946-57) of the Royal Navy; *Sydney* (ex-*Terrible*) and *Melbourne* (ex-*Majestic*) in the Royal Australian Navy; and *Bonaventure* (ex-*Powerful*) in the Royal-Canadian Navy.

DRAWING. Port elevation and plan. Drawn in 1962. Scale: 128 feet = 1 inch.



VIKRANT

Added 1966, courtesy Godfrey H. Walker, Esq

SUBMARINES

In Aug 1965 the Indian Defence Minister said it was proposed to purchase six submarines from the USSR.

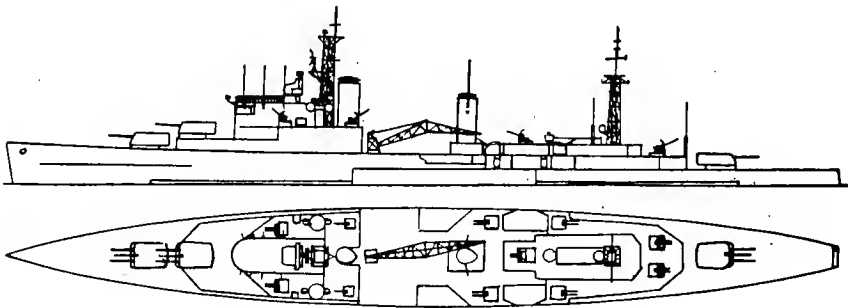
But at the time of compilation only four are reported to be scheduled for transfer in the near future.

These are of the modern "F" class, see particulars and photographs in the USSR section on later pages.

CRUISERS

Name	No.	Builders	Engineers	Laid down	Launched	Completed
MYSORE (ex- HMS <i>Nigeria</i>)	C 60	Vickers-Armstrongs, Ltd, Tyne	Parsons	8 Feb 1938	18 July 1939	23 Sep 1940

Displacement, tons	8 700 standard; 11 040 full load
Length, feet (metres)	538 (164.0) pp; 549 (167.3) wl 555.5 (169.3) oa
Beam, feet (metres)	62 (18.9)
Draught, feet (metres)	21 (6.4) max
Guns, surface	9—6 in (152 mm)
Guns, AA	8—4 in (102 mm)
Armour	12—40 mm; 5 twin and 2 single Side 4½ in—3 in (114—76 mm); Deck 2 in (51 mm); Conning tower 4 in (102 mm); Turrets 2 in (51 mm)
Boilers	4 Admiralty 3-drum
Main engines	Parsons geared turbines 72 500 shp; 4 shafts
Speed, knots	31.5
Complement	800

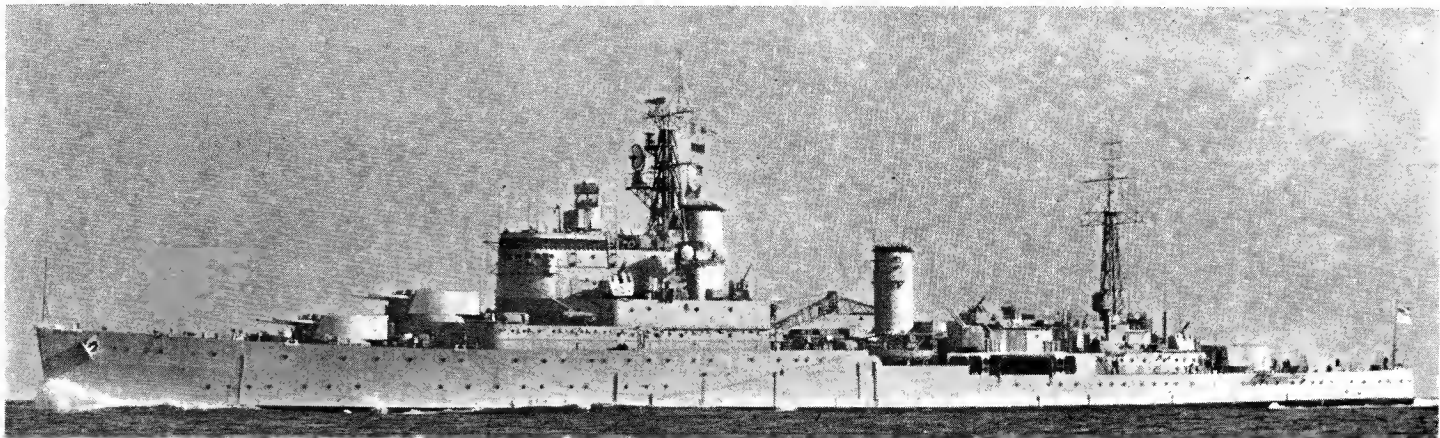


Formerly a "Colony" class cruiser in the Royal Navy. Purchased from Great Britain (announced 8 Apr 1954) for £300 000. Underwent extensive refit and reconstruction by Cammell Laird & Co Ltd, Birkenhead, before commissioning. Formerly handed over to the Indian Navy at Birkenhead and renamed *Mysore* on 29 Aug 1957.

RECONSTRUCTION. Ship formerly had tripod masts. During reconstruction the triple 6 inch turret in "X" position and the 6—21 inch torpedo tubes (tripled) were removed, the bridge was modified, two lattice masts were stepped, all electrical equipment was replaced and the engine room and other parts of the ship were refitted.

DRAWING. Port elevation and plan. Scale 128 feet = 1 inch.

PHOTOGRAPHS. A port bow surface view of *Mysore* appears in the 1957-58 to 1960-61 editions, and an oblique aerial view in the 1961-62 to 1965-66 editions.



MYSORE

1966, Indian Navy, Official

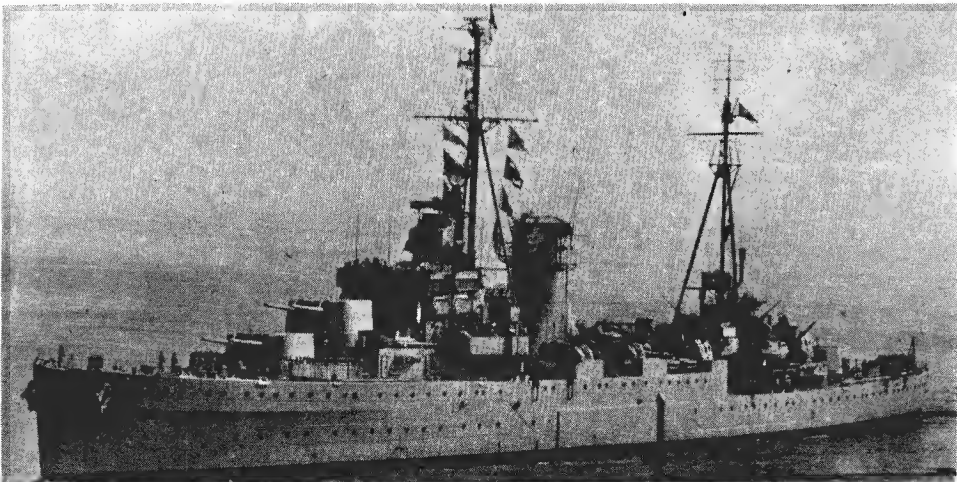
Name	No.	Builders	Laid down	Launched	Completed
DELHI (ex HMS <i>Achilles</i>)	C 74	Cammell Laird & Co Ltd, Birkenhead	11 June 1931	1 Sep 1932	5 Oct 1933

Displacement, tons	7 114 standard; 9 740 full load
Length, feet (metres)	522 pp; 544.5 oa
Beam, feet (metres)	55.2
Draught, feet (metres)	20 max
Guns, surface	6—6 in (152 mm)
Guns, AA	8—4 in (102 mm); 14—40 mm
Guns, saluting	4—3 pdr
Armour	4 in-2 in side, 1 in gunhouses, 1 in bridge, 2 in deck
Main engines	Parsons geared turbines; 4 shafts 72 000 shp = 23 knots
Boilers	4 Admiralty 3-drum type
Oil fuel, tons	1 800
Complement	800

Formerly a "Leander" class light cruiser in the Royal Navy. Purchased from Great Britain and delivered on 5 July 1948. Refitted in 1955.

TORPEDO TUBES. In 1958 the original eight 21 inch torpedo tubes, in two quadruple banks, were removed, their emplacement suppressed, and the forecastle deck plating was consequently extended aft to the twin 40 mm AA guns abreast the boat stowage.

HISTORICAL. As HMS *Achilles*, then lent to the Royal New Zealand Navy, this ship, with HMS *Ajax* and HMS *Exeter*, defeated the German battleship *Admiral Graf Spee* in the Battle of the River Plate on 17 Dec 1939.



DELHI

Added 1966, A. & J. Pavia

DESTROYERS

Name	No.	Builders	Bebun	Launched	Completed	Transferred
RANA (ex-HMS <i>Raider</i>)	D 115	Cammell Laird & Co Ltd, Birkenhead	16 Apr 1941	1 Apr 1942	16 Nov 1942	10 Sep 1949
RAIPUT (ex-HMS <i>Rotherham</i>)	D 209	John Brown & Co Ltd, Clydebank	10 Apr 1941	21 Mar 1942	27 Aug 1942	29 July 1949
RANJIT (ex-HMS <i>Redoubt</i>)	D 141	John Brown & Co Ltd, Clydebank	19 June 1941	2 May 1942	1 Oct 1942	4 July 1949

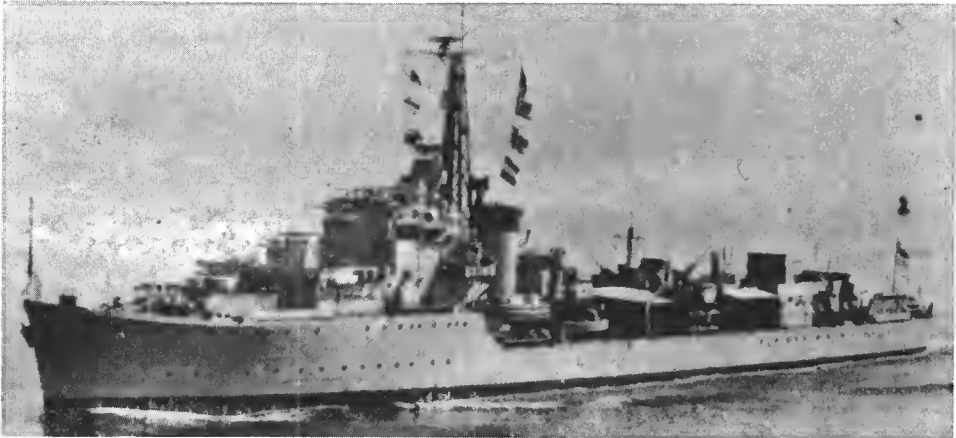
3 "R" Class

Displacement, tons	1 725 standard; 2 424 full load
Dimensions, feet	339.5 wl; 362 oa x 35.7 x 16 max
Guns, surface	4—4.7 in (120 mm)
Guns, AA	4—40 mm
A/S weapons	4 DCT
Main engines	Parsons geared turbines, 2 shafts 40 000 shp = 32 knots
Boilers	2 Admiralty 3-drum type
Oil fuel (tons)	490
Radius, miles	2 500 at 20 knots
Complement	240

These, the first British destroyers with officers' accommodation forward instead of aft, were refitted and modernised prior to transfer. All three arrived in Indian waters in Jan 1950. They constitute the 11th Destroyer Squadron of which *Rajput* is Leader.

TORPEDO TUBES. These ships formerly mounted eight 21-inch torpedo tubes in two quadruple banks.

PHOTOGRAPHS. Photographs of *Rana* appear in the 1953-54 to 1957-58 editions. A photograph of *Ranjit* appears in the 1966-67 edition.



RAJPUT

Added 1967

ESCORT DESTROYERS (Frigates)

Name	No.	Builders	Laid down	Launched	Completed
GANGA (ex-HMS <i>Chiddingfold</i>)	D 94	Scott's Shipbuilding & Engineering Co Ltd, Greenock	1 Mar 1940	10 Mar 1941	16 Oct 1941
GODAVARI (ex-HMS <i>Bedale</i> , ex- <i>Slazak</i> , ex- <i>Bedale</i>)	D 92	R. & W. Hawthorn, Leslie & Co Ltd, Hebburn	29 May 1940	5 Sep 1941	18 June 1944
GOMATI (ex-HMS <i>Lamerton</i>)	D 93	Swan, Hunter & Wigham Richardson Ltd, Wallsend	10 Apr 1949	14 Dec 1940	16 Aug 1944

3 "Hunt" Class. Type II

Displacement, tons	1 050 standard; 1 610 full load
Length, feet (metres)	264.2 (80.5) pp 280 (85.3) oa
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	14 (4.3)
Guns, dual purpose	6—4 in (102 mm)
Guns, AA	4—20 mm
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines 19 000 shp; 2 shafts
Speed, knots	25
Radius, miles	3 700 at 14 knots
Oil fuel (tons)	280
Complement	150



GOMATI

Added 1966, A. & J. Pavia

Former "Hunt" class, Type II frigates F 131, F 126 and F 88, respectively, (ex-Escort Destroyers). Transferred from Great Britain in Apr/May 1953. Lent to the Indian Navy for three years, subject to extension by agreement.

Officially rated as destroyers with D pennant Nos. and constitute the 22nd Destroyer Squadron. *Godavari* is the Leader.

A photograph of *Godavari* appears in the 1953-54 1955-56 editions, and of *Ganga* in the 1954-55 to 1959-60 editions.

GENERAL PURPOSE FRIGATES

3 New Construction "Leander" Class

It is officially stated that three new general purpose frigates are being built by Magazon Docks Ltd, Bombay. They will be generally similar to the Improved Type 12

(Anti-Submarine Versatile Type) frigates of the "Leander" class in the Royal Navy, but modified to suit Indian conditions.

TRANSFERS. Five "356" class escort ships are reported to be scheduled for transfer from the USSR to India in the near future.

ANTI-AIRCRAFT FRIGATES

Name	No.	Builders	Launched	Completed
BEAS	F 137	Vickers-Armstrongs Ltd, Newcastle-on-Tyne	9 Oct 1958	24 May 1960
BETWA	F 139	Vickers-Armstrongs Ltd, Newcastle-on-Tyne	15 Sep 1959	8 Dec 1960
BRAHMAPUTRA (ex- <i>Panther</i>)	F 31	John Brown & Co Ltd, Clydebank	15 Mar 1957	28 Mar 1958

3 "Leopard" Class

Displacement, tons	2 251 standard; 2 515 full load
Dimensions, feet	320 pp; 330 wl; 339.8 oa x 40 x 12.7 max
Guns, surface	4—4.5 in (114 mm), 2 twin turrets
Guns, AA	4—40 mm
A/S weapons	1 Squid 3-barrelled DC mortar
Main engines	Admiralty standard range diesels 2 shafts; 12 380 bhp = 25 knots
Oil fuel (tons)	230
Complement	210

Brahmaputra (Leader) originally, ordered as *Panther* for the Royal Navy on 28 June 1951, was the first major warship to be built in Great Britain for the Indian Navy since India became independent. All three ships are generally similar to the British frigates of the "Leopard" class, but modified to suit Indian conditions.



BEAS

Added 1966, Official

PHOTOGRAPHS. A larger port near broadside view of *Brahmaputra* appears in the 1958-59 to 1960-61 editions, and a starboard bow view of *Betwa* in the 1961-62 to 1965-66 editions.

ANTI-SUBMARINE FRIGATES

2 "Whitby" Class. 1st Rate

Displacement, tons	2 144 standard; <i>Talwar</i> 2 545 full load; <i>Trishul</i> 2 557 full load
Length, feet (<i>metres</i>)	360 (109.7) pp; 369.8 (112.7) oa
Beam, feet (<i>metres</i>)	41 (12.5)
Draught, feet (<i>metres</i>)	17.8 (5.4)
Guns, surface	2—4.5 in (115 mm)
Guns, AA	4—40 mm; twin before Limbos, singles abaft funnel
A/S	2 Limbo 3-barrel DC mortars
Boilers	2 Babcock & Wilcox
Main engines	2 sets geared turbines
	30 000 shp; 2 shafts
Speed, knots	30
Oil fuel (tons)	400
Complement	231 (11 officers, 220 men)

Name	No.	Builders
TALWAR	F 140	Cammell Laird & Co Ltd, Birkenhead
TRISHUL (<i>Leader</i>)	F 143	Harland & Wolff Ltd, Belfast

Launched	Completed
18 July 1958	1960
18 June 1959	1960



TALWAR

Added 1966, Official

Built in Great Britain and generally similar to the British frigates of the "Whitby" class, but modified to suit Indian conditions. *Talwar* is a common type of weapon in India.

TORPEDO TUBES. Provision was made in the original design for twelve 21 inch (eight single A/S and two twin) but they were not fitted.

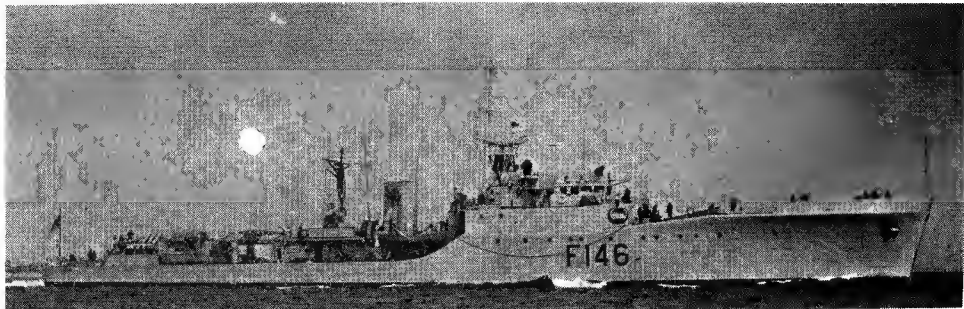
PHOTOGRAPHS. A larger photograph of *Trishul* appears in the 1960-61 edition, and a port quarter oblique aerial view of *Talwar* in the 1961-62 to 1965-66 editions.

3 "Blackwood" Class. 2nd Rate

Displacement, tons	1 180 standard; 1 456 full load
Length, feet (<i>metres</i>)	300 (91.4) pp; 310 (94.5) oa
Beam, feet (<i>metres</i>)	33 (10.0)
Draught, feet (<i>metres</i>)	15.5 (4.7)
Guns, AA	3—40 mm
A/S	2 Limbo 3-barrel DC mortars
Boilers	Babcock & Wilcox
Main engines	1 set geared turbines
	15 000 shp; 1 shaft
Speed, knots	27.8 max; 24.5 sustained sea speed
Oil fuel (tons)	300
Complement	150

Name	No.	Builders
KHUKRI	F 149	J. Samuel White & Co Ltd, Cowes, Isle of Wight
KIRPAN	F 144	Alex Stephen & Sons Ltd, Govan, Glasgow
KUTHAR	F 146	J. Samuel White & Co Ltd, Cowes, Isle of Wight

Launched	Completed
20 Nov 1956	16 July 1958
19 Aug 1958	July 1959
14 Oct 1958	1959



KUTHAR

Added 1966, Wright & Logan

Built in Great Britain, and generally similar to the British frigates of the "Blackwood" class, but slightly modified to suit Indian requirements. *Kirpan* means Sword.

NEW CONSTRUCTION. It is reported that three anti-submarine warfare ships will be built in the first phase of a programme to modernise the Navy.

PHOTOGRAPHS of *Khukri* appear in the 1958-59 to 1965-66 editions.

TORPEDO TUBES. Provision was made for four 21-inch (2 twin) but they were not fitted.

FRIGATES (ex-Sloops)

2 "Kistna" Class

Displacement, tons	1 470 standard; 1 925 full load
Length, feet (<i>metres</i>)	283 (86.3) pp; 295.5 (90.1) wl
	299.5 (91.3) oa
Beam, feet (<i>metres</i>)	38.5 (11.7)
Draught, feet (<i>metres</i>)	11.2 (3.4)
Guns, surface	4—4 in (102 mm)
Guns, AA	4—40 mm
A/S weapons	2 DCT
Boilers	2 three-drum type
Main engines	Parsons geared turbines
	4 300 shp; 2 shafts
Speed, knots	19
Radius, miles	4 500 at 12 knots
Oil fuel (tons)	370
Complement	210

Name	No.	Builders	Laid down	Launched	Completed
CAUVERY	F 110	Yarrow & Co, Ltd, Scotstoun, Glasgow	28 Oct 1942	15 June 1943	21 Oct 1943
KISTNA	F 46	Yarrow & Co, Ltd, Scotstoun, Glasgow	14 July 1942	22 Apr 1943	23 Aug 1943



KISTNA

1962, Edward Rodwell

Former sloops of the British "Black Swan" type built for India and modified to suit Indian conditions. *Cauvery* and *Kistna*, together with *Jumna* (see next page) constituted the 12th Frigate Squadron.

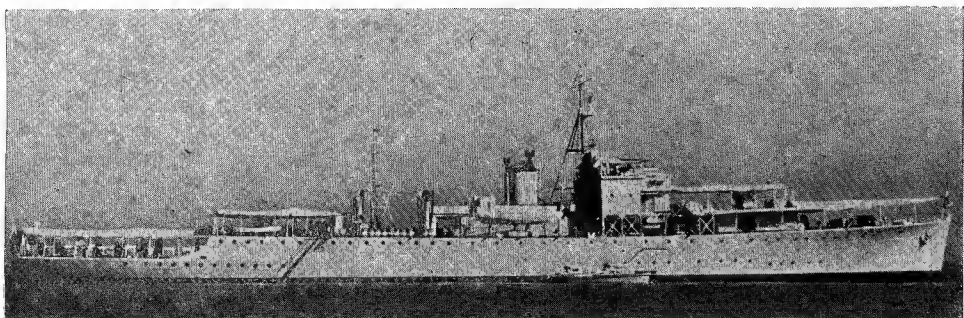
A photograph of *Cauvery* appears in the 1955-56 to 1959-60 editions.

TRAINING FRIGATE

1 "River" Class

Displacement, tons	1 463 standard; 1 934 full load
Length, feet (<i>metres</i>)	283 (86.3) pp; 303 (92.4) oa
Beam, feet (<i>metres</i>)	36.7 (11.2)
Draught, feet (<i>metres</i>)	14.5 (4.4)
Guns, surface	1—4 in (102 mm)
Guns, AA	1—40 mm; 2—20 mm
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	18
Radius, miles	3 100 at 12 knots
Oil fuel (tons)	385
Complement	120

Name	No.	Builders	Laid down	Launched	Completed
TIR (ex-HMS <i>Bann</i>)	F 256	Charles Hill & Sons Ltd, Bristol	18 June 1942	29 Dec 1942	7 May 1943



TIR

1964, Indian Navy, Official

Former "River" class frigate in the Royal Navy. Converted to a Midshipman's Training Frigate by Bombay Dockyard in 1948. Originally the sister ship of *Investigator*, see under Survey Ships.

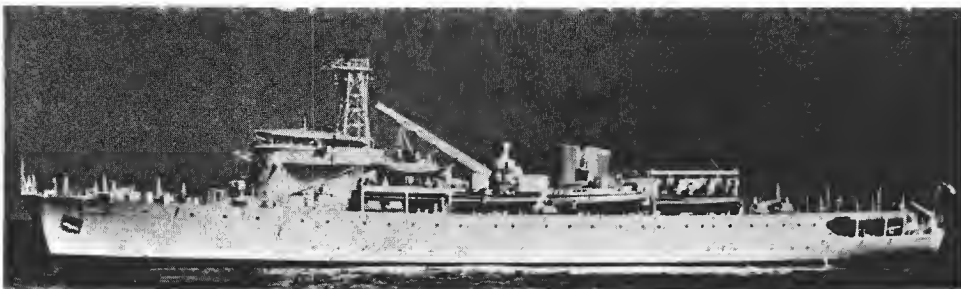
SURVEY SHIPS

1 Indian Built

Name	Builders	Launched	Commissioned
DARSHAK	Hindustan Shipyard, Vizagapatam	2 Nov 1959	28 Dec 1964

Displacement, tons	2 790
Length, feet (metres)	319 (97.2) oa
Beam, feet (metres)	49 (14.9)
Draught, feet (metres)	28.8 (8.8)
Aircraft	1 Helicopter
Main engines	2 diesel-electric units, 3 000 bhp
Speed, knots	16
Complement	150

This ship marked a new stage in Indian shipbuilding. She was the first ship to be built by the Hindustan Shipyard for the Navy. The ship is operated by the Navy's hydro-graphic branch and is undertaking a marine survey of the Indian coastline and harbours. She was fitted with the latest surveying and navigational equipment, and equipped with several surveying boats and motor launches. Provision was also to operate a helicopter. The ship is all welded.



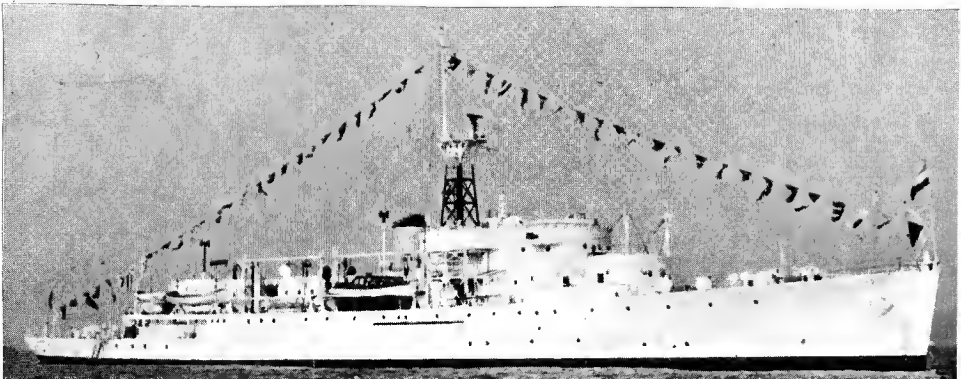
DARSHAK 1967, Official

Name	No.	Builders	Laid down	Launched	Completed
INVESTIGATOR (ex-Khukri, ex-HMS Trent)	F 243	Charles Hill & Sons Ltd, Bristol	31 Jan 1942	10 Oct 1942	15 Feb 1943

1 "River" Class (ex-Frigate)

Displacement, tons	1 460 standard; 1 930 full load
Length, feet (metres)	283 (86.3) pp; 303 (92.4) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	14 (4.3)
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion
	5 500 shp; 2 shafts
Speed, knots	18 max
Radius, miles	5 000 at 10 knots
Oil fuel, (tons)	400
Complement	120

Former "River" class frigate in the Royal Navy. Converted to a survey ship and renamed *Investigator* in 1951. Originally the sister ship of the training frigate *Tir*, see previous page.



INVESTIGATOR 1965, Indian Navy, Official

2 "Sutlej" Class
(Ex-Frigates, ex-Sloops)

Name	No.	Builders	Laid down	Launched	Completed
JUMNA	F 11	Wm. Denny & Bros Ltd, Dumbarton	20 Feb 1940	16 Nov 1940	13 May 1941
SUTLEJ	F 95	Wm Denny & Bros Ltd, Dumbarton	4 Jan 1940	1 Oct 1940	23 Apr 1941

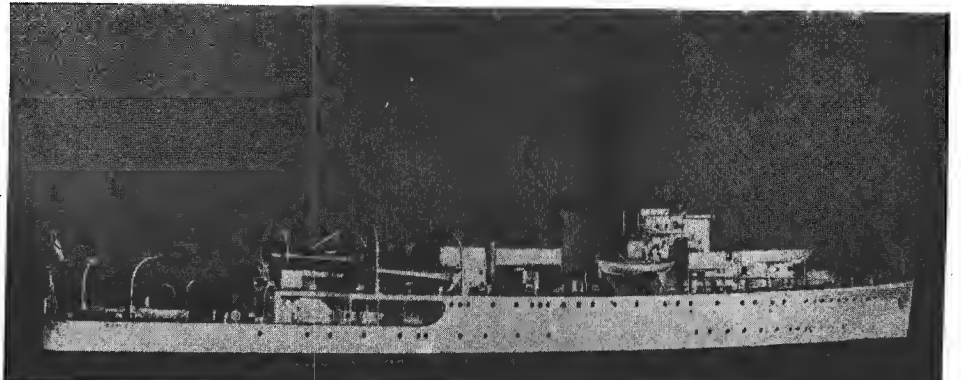
Displacement, tons	1 300 standard; 1 750 full load
Length, feet (metres)	276 (84.1) wl; 292.5 (89.2) oa
Beam, feet (metres)	37.5 (11.4)
Draught, feet (metres)	11.5 (3.5)
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines
	3 600 shp; 2 shafts
Speed, knots	18
Radius, miles	5 600 at 12 knots
Oil fuel (tons)	370
Complement	150

Former frigates employed as survey ships since 1957 and 1955 respectively. Both the ships are generally similar to the former British frigates of the "Egret" class.

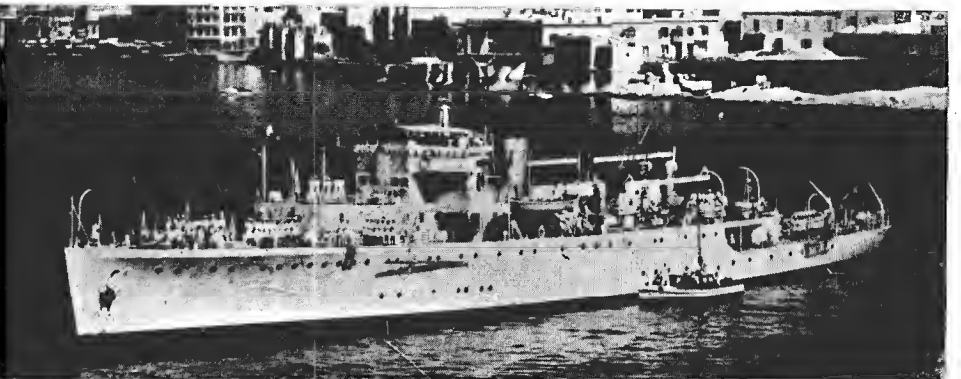
SQUADRON. *Jumna* and *Sutlej*, together with *Cauvery* and *Kistna* (see previous page) formerly constituted the 12th Frigate Squadron.

DISPOSAL
Afonso de Albuquerque, former Portuguese frigate disabled and taken in the Goa conquest in Dec 1961, was incorporated into the Indian Navy after repairs; but there is no official confirmation that she is continuing to be employed in any active capacity.

DISPOSALS OF OCEAN MINESWEEPERS
Of the six ocean minesweepers of the "Bathurst" and "Bangor" classes built during the second World War, which later constituted the 31st Minesweeping Squadron of the Indian Navy, *Rohilkhand* and *Rajputana* were disposed of in 1960, and *Bombay* and *Madras* in 1962. *Bengal* will be discarded in the near future (see full particulars and photographs of these ships in the 1959-60 edition, and of *Konkan* on the next page.



JUMNA 1962, A. & J. Pavia



SUTLEJ 1958, Indian Navy, Official

OCEAN MINESWEEPER

1 "Bangor" Class

KONKAN (ex-HMS Tilbury) M 228

Displacement, tons	656 standard; 825 full load
Dimensions, feet	171.5 pp; 180 oa x 28.5 x 9.5
Guns	1—2 pdr; 4 MG
Main Engines	Triple expansion; 2 shafts; 2 000 ihp = 16.5 knots
Boilers	2 Admiralty 3-drum
Complement	87

Built by Lobnitz & Co Ltd, Renfrew. Laid down on 15 Aug 1941. Launched on 18 Feb 1942. Completed on 12 June 1942. Scheduled for decommissioning for the last several years, but still in the Navy List in Spring 1967 as operational. Three ocean minesweepers of the "Bathurst" class, *Bengal*, *Bombay* and *Madras*, all reciprocating type, built in Sydney, Australia, and three of the "Bangor" class, *Rohilkhand*, turbine type, *Konkan* and *Rajputana*, all built in Scotland, constituted the 31st Minesweeping Squadron. *Rajputana* and *Rohilkhand* were disposed of in 1960 and *Bombay* and *Madras* in 1962. *Bengal* was still in the 1966 navy list, in reserve.



KONKAN

Official

COASTAL MINESWEEPERS

4 "Ton" Class

CANNANORE (ex-Whitton) M 1191 KAKINADA (ex-Durweston) M 1201
CUDDALORE (ex-Wennington) M 1190 KARWAR (ex-Overton) Leader M 1197

Displacement, tons	360 standard; 425 full load
Dimensions, feet	140 pp; 153 oa x 28.8 x 8.2
Guns	1—40 mm AA, 2—20 mm AA
Main Engines	Napier Deltic diesels; 2 shafts; 1 250 bhp = 15 knots
Oil fuel (tons)	45
Complement	40

"Ton" class coastal minesweepers of wooden construction built for the Royal Navy, but transferred from Great Britain to the Indian Navy in 1956. *Cannanore* was built by Fleetlands Shipyard, Ltd, Gosport and launched 30 Jan 1956; *Karwar* was built by Camper & Nicholson, Ltd, Gosport, and launched 30 Jan 1956. *Cuddalore*, built by J. S. Doig Ltd, Grimsby, and *Kakinada*, built by Dorset Yacht Co Ltd, Hamworthy were taken over in Aug 1956, and sailed for India in Nov/Dec 1956. Named after minor ports in India. Constitute the 18th Minesweeping Squadron, together with the inshore minesweepers. Four more are to be acquired. Coastal minesweepers will first be built at the dockyards acquired by the Indian Navy in Bombay and Calcutta.

A photograph of *Cannanore* appears in the 1957-58 to 1963-64 editions and of *Karwar* in the 1964-65 to 1966-67 editions.



CUDDALORE

Added 1965, J. W. Kennedy



KAKINADA

Added 1967

INSHORE MINESWEEPERS

2 "Ham" Class

BASSEIN (ex-Littleham) M 2707 BIMLIPTAN (ex-Hildersham) M 2705

Displacement, tons	120 standard; 170 full load
Dimensions, feet	98 pp; 107 oa x 22 x 6.7
Guns	1—20 mm AA
Main Engines	2 Paxman diesels; 550 bhp = 14 knots (9 knots sweeping)
Oil fuel (tons)	15
Complement	16

"Ham" class inshore minesweepers of wooden construction built for the Royal Navy but transferred from Great Britain to the Indian Navy in 1955. *Bassein* was built by Brooke Marine Ltd, Oulton Broad, Lowestoft, and launched on 4 May 1954. *Bimlipitan* was built by Vosper Ltd, Portsmouth, and launched on 5 Feb 1954.

Barq (ex-MMS 132), MMS 130 and MMS 154, former British motor minesweepers of the "105 ft" type, of wooden construction, transferred from Great Britain, are employed as yard craft. MMS 1632 and MMS 1654 are yard craft in Bombay.



BIMLIPTAN

Added 1966, A & J. Pavia



BASSEIN

Indian Navy, Official

PATROL CRAFT

2 Soviet "Poluchat 1" Class

No. 1 No. 2

Displacement, tons	circa 100
Dimensions, feet	97 x 20 x 6

These fast motor launches are reported to have been received from the USSR at Bombay in Feb 1967.

4 HDML Type

SPC 3110 (ex-HDML 1110) SPC 3117 (ex-HDML 1117)
SPC 3112 (ex-HDML 1112) SPC 3118 (ex-HDML 1118)

Displacement, tons	48 standard; 54 full load
Dimensions, feet	72 oa x 16 x 4.7
Guns	2—20 mm AA
Main Engines	Diesel; 2 shafts; 320 bhp = 12 knots
Complement	14

Former British Harbour Defence Motor Launches. These boats, formerly known as Seaward Defence Motor Launches, constitute the 321st Sea/Land Patrol Craft Squadron.

The seaward patrol craft SPC 6420 (ex-ML 6420, ex-ML 420) of the Fairmile "B" motor launch type, was stricken from the Navy list in 1963.



SPC 3112

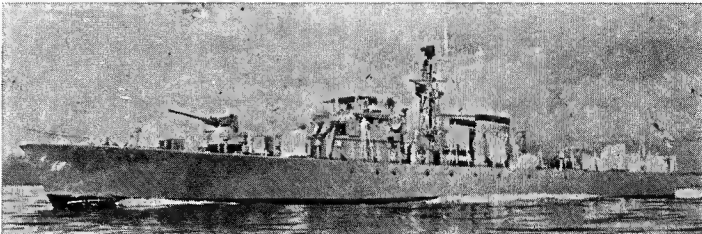
Indian Navy, Official

SEAWARD DEFENCE BOATS

3 "Ajay" Class

ABHAY	AJAY	AKSHAY
Displacement, tons	120 standard; 154 full load (Ajay 146)	
Dimensions, feet	110 pp; 117.2 oa x 20 x 5	
Guns	1—40 mm AA	
Main Engines	2 diesels, speed = 18 knots	

Generally similar to the "Ford" class in the Royal Navy. *Ajay* was built by Garden Reach Workshop, Calcutta and commissioned on 21 Sep 1960. *Abhay* and *Akshay* were both built by Hoogly Docking and Engineering Company Ltd, Calcutta and commissioned on 13 Nov 1961 and 8 Jan 1962, respectively.

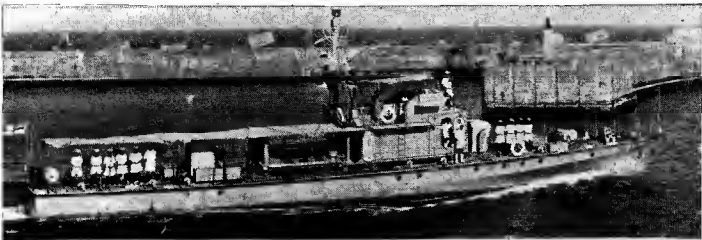


AJAY 1964, Indian Navy, Official

2 "Sharada" Class

SHARADA SDB 3133	SUKANYA SDB 3132
Displacement, tons	86
Dimensions, feet	103.2, length
Guns	Small arms
Main Engines	Diesels

Built in Yugoslavia. Commissioned on 5 Dec 1959 and 12 Dec 1959, respectively.



SHARADA 1964, Indian Navy, Official

4 "Savitri" Class

SAVITRI SDB 3123	SHARYU SDB 3129	SUBHADRA SDB 3130	SUVARNA SDB 3131
Displacement, tons	63		
Dimensions, feet	85.3 pp, 90.2 oa x 20 x 5		
Guns	Small Arms		
Main Engines	2 diesels; 2 shafts; 1 900 bhp = 21 knots		

Built in Italy. Commissioned on 6 Feb 1958, 28 Oct 1957, 20 Aug 1957 and 28 Aug 1957, respectively. Constitute the 322nd SDB Squadron. *Sharyu* is Leader.



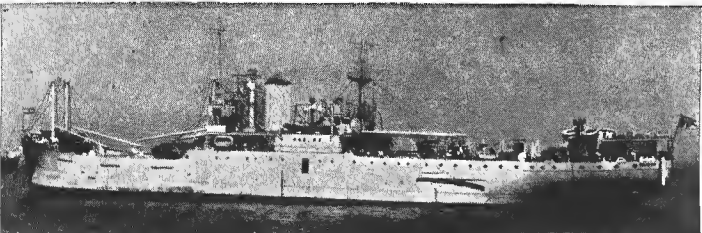
SAVITRI 1964, Indian Navy, Official

REPAIR SHIP

DHARINI (ex-Hermine)

Displacement, tons	4 625
Dimensions, feet	328 x 46 x 19
Main Engines	Triple expansion
Oil fuel (tons)	621

Cargo ship converted to a tender. Officially rated as a repair and store ship. Commissioned in May 1960.



DHARINI 1964, Indian Navy, Official

MOTOR TORPEDO BOATS

6 Soviet Type

MTB 1	MTB 2	MTB 3	MTB 4	MTB 5	MTB 6
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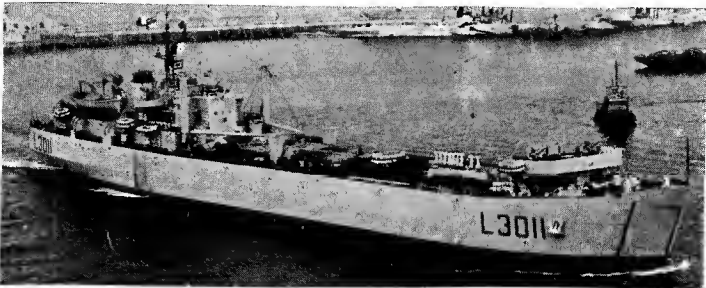
Six motor torpedo boats are reported to be scheduled for transfer from the USSR to India in the near future.

LANDING SHIP

MAGAR (ex-HMS Avenger, LST (3) 3011)

Displacement, tons	2 256 light; 4 980 full load
Dimensions, feet	347.5 oa x 55.2 x 11.2
Guns	2—40 mm AA; 6—20 mm AA; (2 twin, 2 single)
Main Engines	Triple expansion; 2 shafts; 5 500 ihp = 13 knots
Complement	180

Former British tank landing ship of the LST (3) type transferred in 1949.



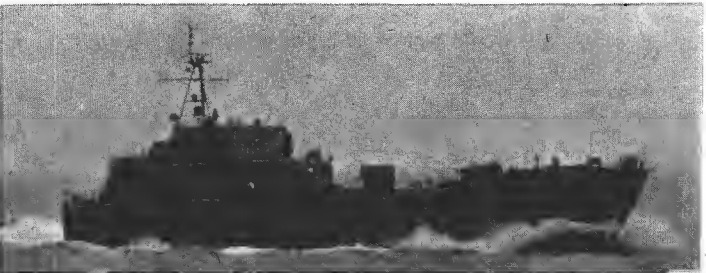
MAGAR Added 1964, A. & J. Pavia

LANDING CRAFT

2 Soviet "Polocny" Class

LSMR 1	LSMR 2
Displacement, tons	900 to 1 000
Dimensions, feet	246 x 39.3 x 9.8
Armament	Rocket projector
Main Engines	Diesels; 4 000 bhp = 15 knots

Two landing craft a new type of amphibious vessels basically similar to the US medium landing ships, rocket (LSMR) are reported to have been received from the USSR in 1966.



POLNOCNY class 1967, col. Breyer

LCT 4294 (Ex-LCT 1294)

Displacement, tons	200
Dimensions, feet	187.2 x 38.8 x 3.5
Main Engines	Speed 9.5 knots

3 000 added to original numbers. LCT 4117, 4298, 4315, 4358 and 4360 were discarded in 1957, and LCT 4310 in 1961. LCT 4294 is employed as a yard craft.

OILERS

SHAKTI

Displacement, tons	3 500
Dimensions, feet	323 x 44 x 20
Main Engines	Diesel; speed: 13 knots max; 9 knots economical

Rated as Fleet Replenishment Group Tanker. Acquired from Italy in Nov 1953.

CHILKA

SAMBHAR

Displacement, tons	1 530 (oil capacity 1 000)
Dimensions, feet	202 x 30.7 x 13
Main Engines	Triple expansion; 809 ihp = 9 knots

Chilka built by Blythwood Shipbuilding Co, Scotstoun. *Sambhar* by A. & J. Inglis, Ltd, Glasgow, launched 1942. Both acquired in 1948. Engine by David Rowan & Co. Two steam dynamos, two steam pumps, ballast pump. Rated as yard craft.

TUG

HATHI

Displacement, tons	668
Dimensions, feet	147.5 x 23.7 x 15
Main Engines	Triple expansion; speed = 13 knots

Built by the Taikoo Dock & Engineering Company, Hong Kong. Launched in 1932.

INDONESIA

Administration

Minister/Commander-in-Chief of the Navy:
Admiral R. Muljadi

Deputy Chief of the Naval Staff (Operations):
Rear-Admiral R. Subono

Commander-in-Chief Indonesian Fleet:
Rear-Admiral L. M. D. Abdul Kadir

Personnel

Navy: 25,300 (2,300 officers, 23,000 men)
Total: 34,200 (including 3,550 Marine Corps,
Fleet Air Arm, and Commando Corps)

Strength of the Fleet

- 6 Diesel Powered Submarines
- 1 Cruiser
- 7 Destroyers
- 11 Frigates
- 3 Corvettes (Ocean Minesweepers)
- 12 Patrol Vessels
- 31 Motor Torpedo Boats
- 6 Fleet Minesweepers
- 15 Coastal Minesweepers
- 23 Patrol Boats
- 21 Motor Gunboats
- 25 Seaward Defence Craft
- 8 Landing Ships
- 7 Landing Craft
- 73 Support Ships and Service Craft

Diplomatic Representation

Naval and Air Attaché in London:
Colonel Atmodjo Brotodarmodjo

Naval and Air Attaché in Washington:
Brigadier General Imam Soetomo

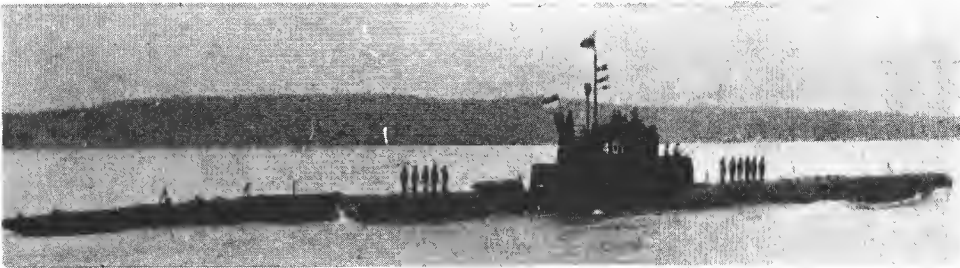
Mercantile Marine

Lloyd's Register of Shipping:
440 vessels of 582,417 tons gross

SUBMARINES

12 Ex-U.S.S.R. "W" Class

ALUGORO	NANGGALA	TJAKRA
Displacement, tons	1 030 surface; 1 180 submerged	
Length, feet (metres)	240 (73.1) oa	
Beam, feet (metres)	22 (6.7)	
Draught, feet (metres)	15 (4.6) max	
Guns, AA	2—2.4 in (57 mm); 2—25 mm	
Torpedo tubes	6—21 in (533 mm) 4 forward, 2 aft, 14 torpedoes carried	
Mines	40, or 20 additional torpedoes	
Main engines	4 000 bhp diesels; 2 500 hp electric motors, diesel-electric drive; 2 shafts	
Speed, knots	17 on surface; 15 submerged	
Radius, miles	13 000 to 16 500	
Complement	60	



TJAKRA

Indonesian Navy, Official

Former Soviet submarines of the medium sized, long range "W" class. *Nanggala* and *Tjakra* were purchased from Poland and transferred to the Indonesian Navy in Aug 1959. *Nanggala* was overhauled at Surabaya in

1960. Pennant Nos. 402 and 401, respectively. *Alugoro*: Fennant No. 512. The four Soviet submarines of the "W" class, which arrived in Indonesia on 28 June 1962, brought the total

number of this class transferred to Indonesia by the USSR to 14 units, but it is reported that only six will be maintained operational, while six are kept in reserve and two used for spare parts.

CRUISER

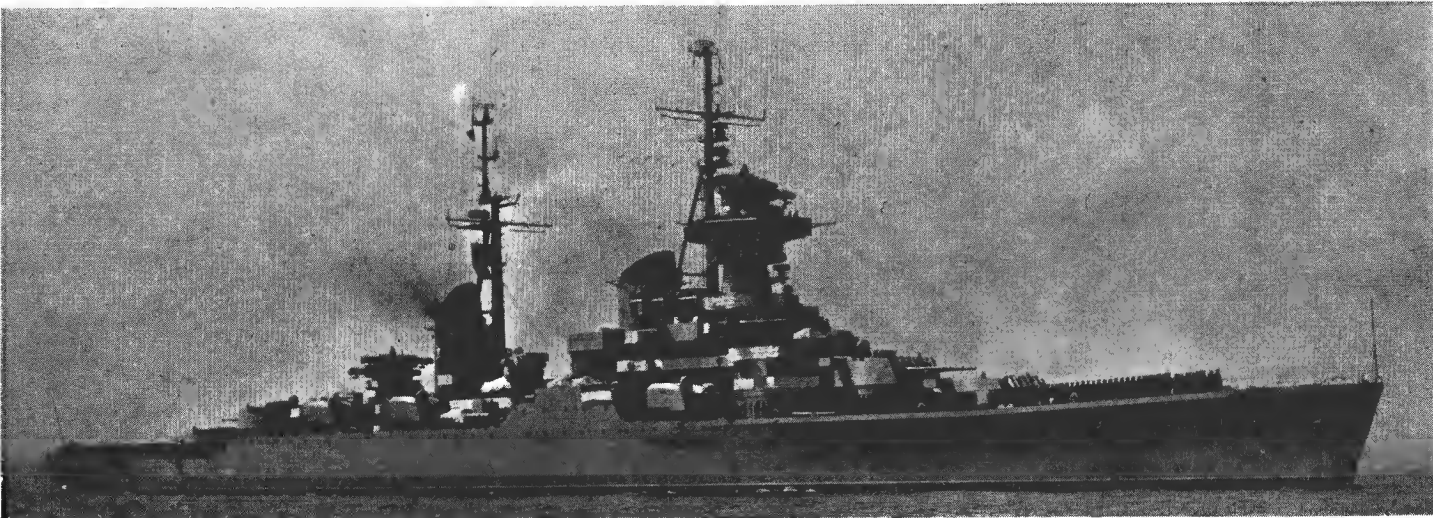
1 Ex-U.S.S.R. "Sverdlov" Class

IRIAN (ex-Ordzhonikidze)	
Displacement, tons	15 450 standard; 19 200 full load
Length, feet (metres)	650 (198.0) pp; 689 (210.0) oa
Beam, feet (metres)	70 (21.3)
Draught, feet (metres)	16 (4.9) mean; 24.5 (7.5) max
Guns, surface	12—6 in (152 mm), 4 triple
	12—3.9 in (100 mm), 6 twin
Guns, AA	32—37 mm, 16 twin mounts

Torpedo tubes	10—21 in (533 mm), 2 quintuple
Mines	140 to 250 capacity
Armour	Belt 4 in to 1½ in (100 to 38 mm) CT 6 in (150 mm); turrets 5 in (125 mm); deck 3 in to 1 in (75 to 25 mm)
Boilers	6
Main engines	Geared steam turbines 130 000 shp; 2 shafts
Speed, knots	34.5
Radius, miles	5 000 at 20 knots

Oil fuel (tons) 4 000
Complement 1050

Irian was transferred from the USSR to Indonesia where she arrived in Oct 1962. Pennant No. 201. A second Soviet cruiser was to have been acquired by the end of 1963, according to the Indonesian (then) Deputy Chief of Naval Staff. She was being modified to suit Indonesian requirements and conditions in the equatorial climate, and her armament was to be different from that of her sister ship. But in fact only one "Sverdlov" class cruiser had been transferred from the USSR to Indonesia by 1967.



IRIAN

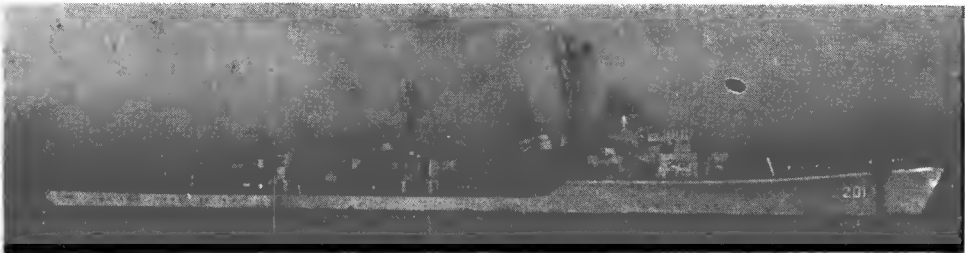
Added 1963, Wright & Logan

DESTROYERS

7 Ex-U.S.S.R. "Skori" Class

BRAWIDJAJA	SANDJAJA
DIPONEGORO	SAWUNGGALING
ISKANDAR:JUDA	SILIWANGI
	SINGAMANGARADJA
Displacement, tons	2 600 standard; 3 500 full load
Length, feet (metres)	393.8 (120.0) pp; 420 (128.0) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	13.1 (4.0)
Guns, surface	4-5.1 in (130 mm), 2 twin
Guns, AA	2-3 in (76 mm); 7-37 mm; certain ships have 8-37 mm in twin mounts
A/S	4 DCT
Torpedo tubes	10-21 in (533 mm)
Mines	80
Boilers	3
Main engines	Geared turbines
	70 000 shp; 2 shafts
Speed, knots	38
Radius, miles	4 000 at 15 knots
Complement	250

Former Soviet destroyers of the "Skori" type. Built in 1951-56. Four were purchased from Poland and transferred to the Indonesian Navy in 1959. Pennant Nos.



SILIWANGI

Indonesian Navy, Official

203, 204, 201 and 202, respectively. Pennant No. of *Singamangaradja* (which means Gannet) was reported in 1963 as 302. *Sawunggaling* was originally named *Sarwadjala*. *Iskandandarmuda* was transferred in 1962 and *Brawidjaja* and *Diponegoro* in 1964.

DISPOSAL. *Gadjah-Mada* (ex-*Tjerk Hiddes*, ex-*Nonpareil*) a destroyer of the British "N" class, purchased from Great Britain by the Netherlands in 1941, and transferred from the Royal Netherlands Navy to the Indonesian Navy on 1 Mar 1951, was scrapped in 1961.



SANDJAJA

Indonesian Navy, Official

FRIGATES

7 Ex-U.S.S.R. "Riga" Class

405	406
Displacement, tons	1 200 standard; 1 600 full load
Length, feet (metres)	278.8 (85.0) pp; 295 (90.0) oa
Beam, feet (metres)	34.5 (10.5)
Draught, feet (metres)	9.5 (2.9)
Guns, dual purpose	3-3.9 in (100 mm) single mounts
Guns, AA	4-37 mm
A/S	4 DC projectors
Torpedo tubes	3-21 in (533 mm)
Mines	Fitted with mine rails
Boilers	2
Main engines	Geared steam turbines
	25 000 shp; 2 shafts
Speed, knots	28

Two "Riga" class frigates, pennant Nos. 405 and 406, were transferred from the USSR to Indonesia with the cruiser *Irian* in Sep. 1962. Two more were transferred the following year and three more a year later.



RIGA Class

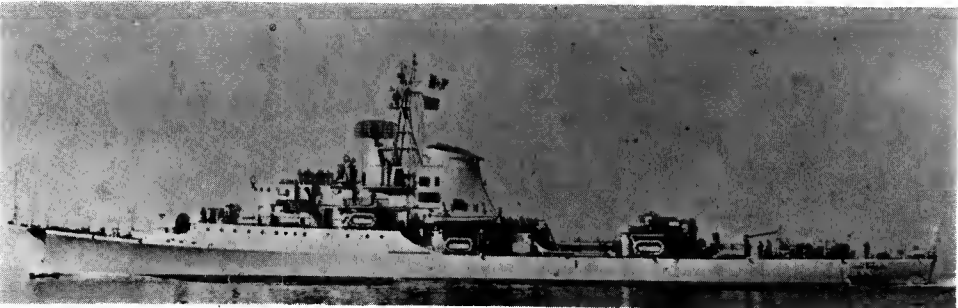
Sergei Romanov

2 "Surapati" Class

Displacement, tons	1 150 standard; 1 500 full load
Length, feet (metres)	295.2 (90.0) pp 325 (99.0) oa
Beam, feet (metres)	36 (11.0)
Draught, feet (metres)	8.5 (2.6)
Guns, AA	4-4 in (102 mm) 46 cal., 2 twin mounts; 6-30 mm, 3 twin; 6-20 mm, 3 twin
A/S	2 Hedgehogs; 4 DCT
Torpedo tubes	3-21 (533 mm)
Boilers	2 Foster Wheeler
Main engines	2 sets Parsons geared turbines
	24 000 shp; 2 shafts
Speed, knots	32
Radius, miles	2 800 at 22 knots cruising speed
Oil fuel (tons)	350
Complement	200

Fast frigate or light destroyer type. A photograph of *Surapati* appears in the 1959-60 to 1966-67 editions.

Name	No.	Builders	Laid down	Launched	Completed
IMAN BONDJOL	250	Ansaldo, Leghorn	8 Jan 1956	5 May 1956	19 May 1958
SURAPATI	251	Ansaldo, Leghorn	Jan 1956	5 May 1956	28 May 1958



IMAN BONDJOL

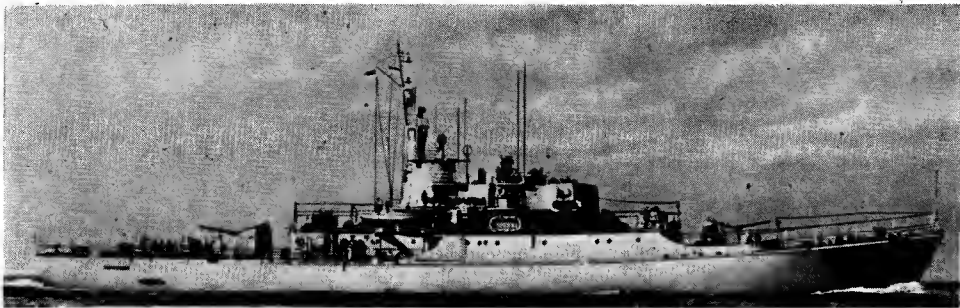
courtesy Dr Ing Luigi Accorsi

Frigates—continued

2 "Pattimura" Class

Name	No.	Builders	Laid down	Launched	Completed
PATTIMURA	252	Ansaldo, Leghorn	8 Jan 1956	1 July 1956	28 Jan 1958
HASANUDIN	253	Ansaldo, Leghorn	8 Jan 1956	24 Mar 1957	8 Mar 1958

Displacement, tons 950 standard; 2 200 full load
Length, feet (metres) 246 (75 0) pp; 270 2 (82 4) oa
Beam, feet (metres) 34 (10 4)
Draught, feet (metres) 9 (2 7)
Guns, AA 2—3 in (76 mm) 40 cal.
A/S 2—30 mm 70 cal twin
Main engines 2 Hedgehogs; 4 DCT
3 Ansaldo-Fiat diesels
6 900 bhp; 3 shafts
Speed, knots 22
Radius, miles 2 400 at 18 knots cruising speed
Oil fuel (tons) 100
Complement 110



PATTIMURA

Added 1966, courtesy Dr Ing Luigi Accorsi

Small sloop or fast corvette type. A photograph of *Hasanudin* appears in the 1963-64 to 1965-66 editions.

PATROL VESSELS

8 Ex-U.S.S.R. "Kronstadt" Type

KATULA LADJURA	LAPAI LUMBA-LUMBA	MADIDIHANG MOMARE	TJUTJUT TONGKOL
Displacement, tons 300 Dimensions, feet 167 3 × 19 3 × 9 Guns 1—3 9 in; 2—37 mm AA; 3—20 mm AA A/S weapons Depth bomb projectors Mines Fitted for laying Main Engines Diesels; 2 shafts; bhp = 27 knots Oil fuel (tons) 20 Complement 40			

Former Soviet submarine chasers of the "Kronstadt" type. Built in 1951-54. Transferred to the Indonesian Navy on 30 Dec 1958. Pennant Nos. 301 to 308.



"Kronstadt" Class

1961, Indonesian Navy, Official

4 Ex-U.S. PC Type

HUI (ex-USS <i>Malvern</i> , PC 580) TENGIRI (ex-USS <i>PC</i> 1183)	TJAKALANG (ex-USS <i>Pierre</i> , PC 1141) TORANI (ex-USS <i>Manville</i> , PC 581)
Displacement, tons 280 standard; 450 full load Dimensions, feet 170 wl; 173 7 oa × 23 × 10 8 max Guns 1—3 in; 1—40 mm AA; 2—20 mm AA; 4 DCT Main Engines 2 GM diesels; 2 shafts; 2 880 bhp = 20 knots Oil fuel (tons) 60 Radius, miles 5 000 at 10 knots Complement 54 (4 officers, 50 men)	

Former American submarine chasers of the steel-hulled PC type. Built in 1942-43. *Pierre* transferred from the US Navy at Pearl Harbour, Hawaii in Oct 1958 and *Malvern* and *Manville* in Mar 1960. Pennant Nos. 318, 309, 313 and 317, respectively.

Sister ship *Alu-Alu* (ex-USS *PC* 787) removed from the effective list in 1961.



TINGGIRI

1966, Indonesian Navy, Official

CORVETTES

3 "Banteng" Class (Ocean Minesweepers)

BANTENG (ex- <i>Ambon</i> , ex-HMAS <i>Cairns</i>)	7 Oct 1941	255
PATI UNUS (ex- <i>Tidore</i> , ex-HMAS <i>Tamworth</i>)	14 Mar 1942	256
RADJAWALI (ex- <i>Banda</i> , ex-HMAS <i>Wollongong</i>)	5 July 1941	254

Displacement, tons 815 standard; 1 025 full load
Dimensions, feet 162 pp; 186 oa × 31 × 8 3
Guns 1—4 in; 1—40 mm AA; 4—20 mm AA
Main engines Triple expansion; 2 shafts; 2 000 ihp = 15 5 knots
Boilers 2 of 3-drum type
Oil fuel (tons) 170
Radius, miles 4 300 at 10 knots
Complement 56 to 70

All built in Australia as ocean minesweepers. *Banteng* and *Pati Unus* by Walkers, Maryborough, *Hang Tuah* by Evans Deakin, Brisbane, and *Radjawali* by Cockatoo Docks and Eng Co. Launch dates above. *Hang Tuah* and *Pati Unus* transferred from the Royal Netherlands Navy on 28 Dec 1949, *Banteng* and *Radjawali* on 6 Apr 1950. *Hang Tuah* (ex-*Morotai*, ex-*Ipswich*) was reported sunk by rebel planes off Balikpapan, East Borneo, on 28 Apr 1958. *Pati Unus* has been transferred to the Training Establishment for ratings. A photograph of *Radjawali* appears in the 1955-56 to 1960-61 editions.

MOTOR TORPEDO BOATS

7 German-Built "Jaguar" Type

ADJAK ANOA	BIRUANG HARIMAU	MADJAN KUMBANG	SERIGALA SINGA
Displacement, tons 150 Dimensions, feet 131 pp; 138 oa × 25 × 5 Guns 2—40 mm AA (single) Torpedo tubes 4—21 in Main engines 4 Daimler-Benz diesels; 4 shafts; 12 000 bhp = 40 knots Complement 39			

Built for the Indonesian Navy by Lürssen, Bremen-Vegesack in 1959-60. The first four boats had wooden hulls, but the second four were built of steel. Pennant Nos. 601, 602, 603, 604, 605, 606, 607 and 608. A photograph of *Harimou* appears in the 1960-61 edition (page 434 Addenda).

Matjan Tutul of this class was reported to have been sunk in an engagement with Netherlands forces off West New Guinea on 15 Jan 1962.



SINGA

Indonesian Navy, Official

24 Ex-U.S.S.R. "P 6" Type

ANGIN KUMBANG

Displacement, tons 75 standard; 100 full load
Dimensions, feet 88 × 21 × 5 2
Guns 4—25 mm AA (two twin)
Tubes 2—21 in (two single)
Main engines Diesels; speed 42 knots max

Former Soviet interchangeable gun torpedo boats of the "P 6" class. A total of 24 reported delivered since 1961, including eight in 1961, and six in 1962. Only one name, *Angin Kumbang*, No. 1613, has been notified. The eight boats delivered in Aug-Sep 1961 formed Indonesia's Second Torpedo Boat Squadron.

FLEET MINESWEEPERS

6 Ex-U.S.S.R. "T 43" Type

Displacement, tons 500 standard; 600 full load
Dimensions, feet 200 × 27 2 × 9
Guns 4—37 mm AA; 8—13 mm AA
Main Engines Diesels; 2 shafts; speed = 17 knots

Former Soviet fleet minesweepers of the "T 43" type transferred to Indonesia by the USSR, four in 1962 and two in 1964.

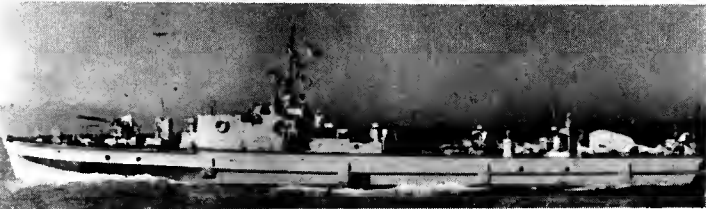
COASTAL MINESWEEPERS

10 "R" Class (Raum-boats)

PALAU RASS 503	PALAU REMPANG 508	PALAU ROMA 502
PALAU RANGSANG 506	PALAU RENGAT 509	PALAU ROTI 504
PALAU RAU 501	PALAU RINDJA 507	PALAU RUPAT 505
		PALAU RUSA 510

Displacement, tons	139.4 standard
Dimensions, feet	129 x 18.7 x 5
Guns	1—40 mm AA; 2—20 mm AA
Main engines	2 MAN diesels; 12 cyl; 2 800 bhp = 24.6 knots
Complement	26

Built by Abeking & Rasmussen Yacht-und Bootswerft, Lemwerder IO in 1945-57. These boats have a framework of light metal covered with wood.



PALAU ROTI Indonesian Navy, Official

DJAMPEA	DJOMBANG	ENGGANO (ex-Hino Maru)	FLORES
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Displacement, tons	175
Dimensions, feet	106.7 pp; 113.7 (Flores) 114.1 oa x 18.8 x 6.2
Main Engines	1 Enterprise diesel; 360 bhp = 12.5 knots

First three were commissioned in 1941. Flores was completed by the Japanese during the occupation of Java. First two were built at Droogdok Maatschappij, and the other two at Droogdok Mij, Tandjong Priok. Used as auxiliary minesweepers by the Royal Netherlands Navy. Enggano was re-named by Japanese. These ships were recovered after the war.

1 Ex-U.S.S.R. "T 301" Class

Displacement, tons	130
Dimensions, feet	100 x 16 x 4.5
Guns	2—37 mm AA
Main Engines	Diesels; 480 bhp = 10 knots

Former Soviet inshore minesweeper of the "T 301" type reported to have been transferred from the USSR to Indonesia in 1962.

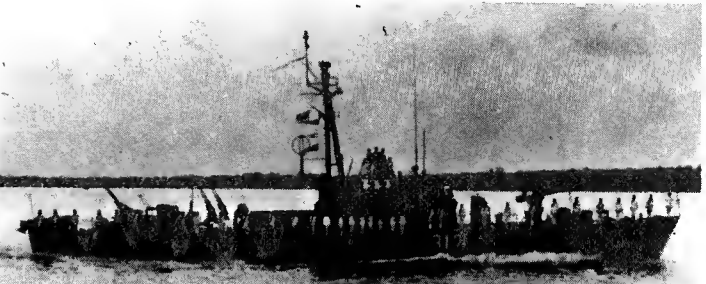
PATROL BOATS

6 Ex-Yugoslavian "Kraljevica" Type

BUBARA	JAJANG	LEMADANG
DORANG	KRAPU	TODAK

Displacement, tons	190 standard; 245 full load
Dimensions, feet	134.5 x 20.8 x 7
Guns	1—3 in; 1—40 mm AA; 6—20 mm AA
A/S weapons	DC
Main Engines	2 MAN diesels; 2 shafts; 3 300 bhp = 20 knots
Oil fuel (tons)	15
Radius, miles	1 500 at 12 knots
Complement	54

Former Yugoslavian submarine chasers of the "Kraljevica" class. Purchased and transferred on 27th Dec 1958. Nos 310 to 312 and 314 to 316.



LAJANG 1961, Indonesian Navy, Official

5 "Mawar" Class. New Construction

Displacement, tons	147
Guns	40 mm AA
Main engines	2 diesels; speed 21 knots

Indonesia was reported to be building five submarine chasers of the "Mawar" class in her own yards. Similar to the prototype *Kebang*.

12 Ex-U.S.S.R. "Komar" Class

Displacement, tons	75 standard; 100 full load
Dimensions, feet	88 x 21 x 5.2
Guns	2—25 mm AA (1 twin)
Guided weapons	2 launchers in twin housing with missiles of 10 to 15 nautical miles range
Main engines	Diesels; speed = 40 knots

Former Soviet guided missile patrol boats of the "Komar" class. Six were transferred to Indonesia in 1961-63; four more in Sep 1964 and two in 1965.

MOTOR GUNBOATS

18 Ex-U.S.S.R. "BK" Class

Displacement, tons	120
Dimensions, feet	124.7 x 19 x 4.6
Guns	1—85 mm; 4—25 mm AA
Main engines	Diesels; speed 20 knots

Reported to have been transferred from the USSR to Indonesia in 1962. Fitted with large gun mounting. Ten Soviet-built gunboats are reported to have been transferred to Indonesia at Djakarta 11 Oct 1961.

3 U.S. PGM Type

PGM 55	PGM 56	PGM 57
--------	--------	--------

Displacement, tons	100
Dimensions, feet	Length: 95
Guns	1—40 mm AA
Main Engines	Speed 16 knots

Built in the United States to a PGM type motor gunboat design for transfer to Indonesia under the Military Aid Program.

SEAWARD DEFENCE CRAFT

25 Ex-HDML Patrol Boat Types

PP 01	PP 06	PP 011	PP 016	PP 021
PP 02	PP 07	PP 012	PP 017	PP 022
PP 03	PP 08	PP 013	PP 018	PP 023
PP 04	PP 09	PP 014	PP 019	PP 024
PP 05	PP 10	PP 015	PP 020	PP 025

Displacement, tons	46 standard; 54 full load
Dimensions, feet	72 x 16 x 5.5
Guns	1—37 mm; 2—20 mm Oerlikon MG
Main Engines	2 diesels; 2 shafts; 300 bhp = 11 knots
Complement	10

All ex-Netherlands patrol boats. Built in 1943-46. Formerly British HDML type RP 109, RP 111, RP 112, RP 114, and RP 118 ex-HDML 1451, HDML 1472, HDML 1473, HDML 1454 and HDML 1449).

Displacement, tons	44 standard; 56 full load
Dimensions, feet	62.00 x 18.3 x 4
Guns	1—20 mm AA; 1 MG
Main Engines	1 diesel; 165 bhp = 10 knots
Complement	10

Built in 1945-46. Former American Higgins type motor launches, later Netherlands RP 120, RP 121, RP 122, RP 125, RP 127, RP 128, RP 130, RP 134, and RP 136, transferred to Indonesia in 1950.

Displacement, tons	54
Guns	1—40 mm AA; 2—20 mm AA
A/S weapons	3 DCT
Main Engines	Speed = 11 knots
Complement	10

Former Netherlands motor launch RP 138, transferred by the Royal Netherlands Navy in 1950. A photograph of this type appears in the 1951-52 to 1960-61 editions.

TRAINING SHIPS

NANUSA

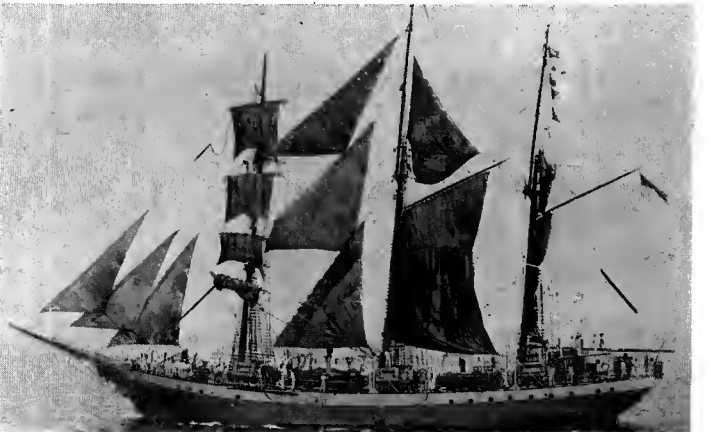
Displacement, tons	14 320
Dimensions, feet	441.7 x 58.3 x 26.3
Guns	1—3 in; 1—40 mm; 2—37 mm; 4—20 mm; 6—12.7 mm MG
Main Engines	Triple expansion; 1 shaft; 2 800 ihp = 9 knots
Boilers	3
Complement	100 (accommodation for 350 ratings under training)

Transferred to the Indonesian Navy in 1958. A converted freighter.

DEWARUTJI

Displacement, tons	810 standard; 1 500 full load
Dimensions, feet	191.2 oa; 136.2 pp x 31.2 x 13.9
Main Engines	MAN diesel engines; 600 bhp = 10.5 knots
Complement	110 (32 + 78 midshipmen)

Training ship for Indonesian Navy, built in Germany by H. C. Stülcken & Sohn, Hamburg. Launched on 24 Jan 1953. Completed on 9 July 1953. Barquentine of iron construction. Sail area, 1 305 sq yds (1 091 sq metres). Speed with sails 12.8 knots.



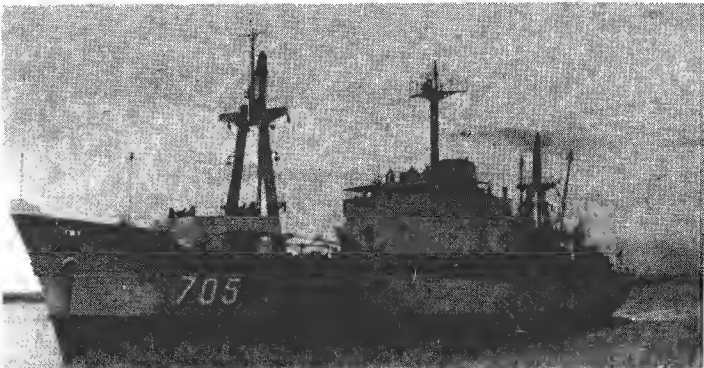
DEWARUTJI 1967, courtesy Mr Martin E. Holbrook

SUBMARINE SUPPORT SHIPS

MULTATULI

Displacement, tons	3 220
Dimensions, feet	33B pp, 365.3 oa × 52.5 × 23
Guns	1—85 mm, 4—40 mm (single mountings)
Main engines	B & W diesel, 5 500 bhp = 18.5 knot max
Oil fuel (tons)	1 400
Radius, miles	6 000 at 16 knots cruising speed
Complement	134

Built in Japan by Ishikawajima-Harima Heavy Industries Co Ltd, as a submarine tender. Launched on 15 May 1961. Delivered to Indonesia in Aug 1961. Pennant No. 476. Flush decker. Capacity for replenishment at sea (fuel oil, fresh water, provisions, ammunition, naval stores and personnel). Medical and hospital facilities. Equipment for supplying compressed air, electric power and distilled water to submarines. Air conditioning and mechanical ventilation arrangements for all living and working quarters.



MULTATULI 1962, Indonesian Navy, Official

1 Ex-U.S.S.R. "Don" Class

RATULANGI

Displacement, tons	4 750 standard; 6 000 full load
Dimensions, feet	450 × 49 × 17
Guns	4—3.9 in; 12—37 mm AA
Main Engines	Diesels; speed = 21 knots approx
Complement	300

A submarine support ship, escort vessel and maintenance tender of the "Don" class, transferred from the USSR to Indonesia in 1962, arriving in Indonesia in July with Soviet pennant No. 441.

1 Ex-U.S.S.R. "Atrek" Class

THAMRIN

Displacement, tons	3 500 standard
Measurement, tons	3 25B gross
Dimensions, feet	336 × 49 × 20
Main Engines	Steam expansion and exhaust turbine; 2 450 ihp = 13 knots
Boilers	2
Radius	3 500 miles

Former Soviet advanced submarine parent ship of the smaller tender type. Built in 1955-57 and converted to naval use from a mercantile freighter. Arrived in Indonesia on 28 June 1962 as a transfer from the USSR "Atrek" class.

SURVEY SHIPS

BURDIAMHAL

Displacement, tons	1 200
Dimensions, feet	211.7 oa; 192 pp × 33.2 × 10
Main Engines	2 Werkspoor diesel engines; 1 160 bhp = 10 knots
Complement	90

Built by Scheepswerf De Waal, Zalthomme. Launched on 6 Sep 1952. Completed on 6 July 1953. A photograph of this ship appears in the 1954-55 to 1960-61 editions.

SAMUDERA

Measurement, tons	200 gross
Dimensions, feet	125.2 × 21.5 × 9.8
Main Engines	Werkspoor diesel engine; 450 bhp

Built by Ferus Smit, Foxol. Launched on 28 May 1952. Completed on 28 Aug 1952. Same type as "Bango" class motor patrol vessels. Equipped as a laboratory ship, used for deep sea exploration in Indonesian waters. A photograph of this vessel appears in the 1953-54 to 1960-61 editions.

CABLE SHIP

BIDUK

Displacement, tons	1 250 standard
Dimensions, feet	213.2 oa × 39.5 × 11.5
Main Engines	1 Triple expansion engine; 1 600 ihp = 12 knots
Complement	66

Cable Layer, Lighthouse Tender, and multi-purpose naval auxiliary. Built by J. & K. Smit, Kinderijk. Launched on 30 Oct 1951. Completed on 30 July 1952. A photograph of this ship appears in the 1953-54 to 1960-61 editions.

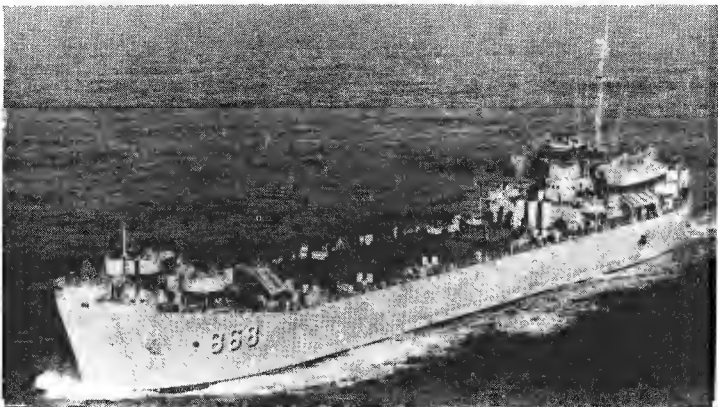
LANDING SHIPS

6 Ex-U.S. LST "511-1152" Type

TANDJUNG NUSANIE, LST 1 (ex-USS *Lawrence County*, LST 887)
TANDJUNG RADJA, LST 2 (ex-USS *Russell County*, LST 1090)
TELUK BAYUR, LST 870 (ex-USS *LST 616*)
TELUK KAU, LST 871 (ex-USS *LST 652*)
TELUK LANGSA, LST B6B (ex-USS *Solano County*, LST 1128)
TELUK MENADO, LST B72 (ex-USS *LST 657*)

Displacement, tons	1 653 standard; 4 080 full load
Dimensions, feet	316 wl; 328 oa × 50 × 14
Guns	7—40 mm AA; 2—20 mm AA
Main Engines	GM diesels; 2 shafts; 1 700 bhp = 11.6 knots
Oil fuel (tons)	600
Radius, miles	7 200 at 10 knots
Cargo capacity	2 100 tons
Complement	119 (accommodation for 266)

Teluk Langsa was transferred by the United States at Seattle, Washington, on 31 Mar 1960. *Tandjung Nusanie* and *Tandjung Radja* were transferred on 27 Dec 1960, and *Teluk Bayur*, *Teluk Kau* and *Teluk Menado* on 17 June 1961.



TELUK LANGSA 1961, Indonesian Navy, Official

1 Japanese Type

TELUK AMBOINA LST B69

Displacement, tons	2 200 standard; 4 800 full load
Dimensions, feet	327 × 50 × 15
Guns	2—85 mm; 4—40 mm
Main Engines	MAN diesels; 2 shafts; 3 000 bhp = 13.1 knots
Oil fuel (tons)	1 200
Radius, miles	4 000 at 13.1 knots
Complement	BB (accommodation for 300)

Built in Japan. Launched on 17 Mar 1961 and transferred in June 1961.

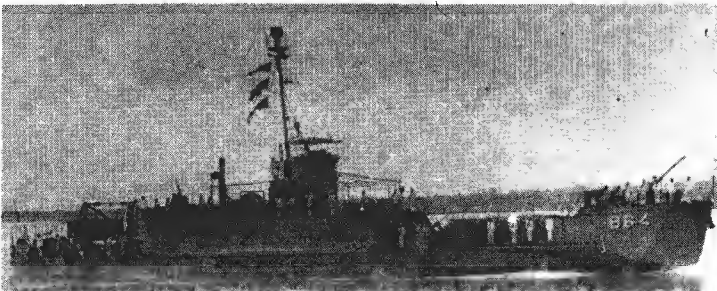
LANDING CRAFT

3 Ex-U.S. LCI Type

AMAHAI (ex-*Tropenvogel*, LCI 467) 864 **MARICH** (ex-*Zeemeeuw*) 866
PIRU (ex-*Zeearend*, LCI 420) B68

Displacement, tons	250 standard; 381 full load
Dimensions, feet	158 × 23 × 7
Guns	1—37 mm; 2 Vickers MG
Main engines	GM diesels; 1 800 bhp = 15 knots
Complement	60

Former US infantry landing craft. Turned over from Netherlands East Indies Government on formation of Indonesian Navy in 1950. Sister ships *Baruna* (ex-*Jysvogel*, LCI 948) and *Namlea* (ex-*Stormvogel*) LCI 588, were rerated as pilot ship and light ship in 1961.



AMAHAI 1961, Indonesian Navy, Official

4 Ex-Yugoslavian LCT Type

TELUKKATURAI **TELUKWADJO** **TELUKWEDA** **TELUKWORI**

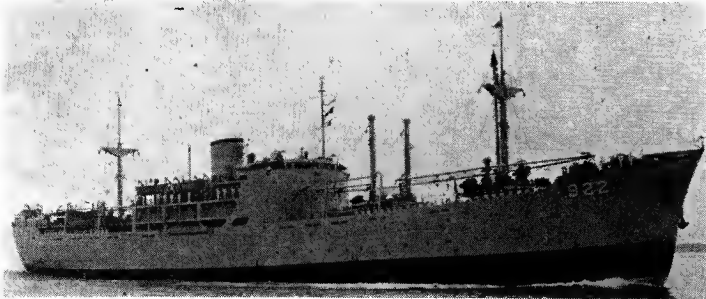
Displacement, tons	110 standard; 250 full load
Dimensions, feet	166 × 21.5 × 5.5
Guns	1—40 mm; 2—20 mm
Main engines	2 diesels; 2 shafts; 375 bhp = 7 knots
Oil fuel (tons)	6
Complement	15

Transferred from Yugoslavia on 1 Nov 1958. Nos 862, 860, 861 and 863.

TRANSPORTS

HALMAHERA (ex-Bau Masepe)		MOROTAI (ex-Sawega)	
Displacement, tons	5 614 standard; 4 830 full load		
Dimensions, feet	435.5 × 58 × 12.7		
Guns	1—3 in; 4—40 mm; 4—20 mm		
Main Engines	B. & W. diesel; 4 600 bhp = 12 knots		
Oil fuel (tons)	990		
Complement	116		

Transferred to the Indonesian Navy on 23 Nov 1957. Pennant Nos. 921 and 922.



MOROTAI Indonesian Navy, Official

BANGGAI (ex-Biscaya)		NUSA TELU (ex-Casa Blanca)	
Measurement, tons	750		
Dimensions, feet	168 × 27.9 × 7.8		

Dual purpose troop and cargo ships. Renamed in 1961. Pennant Nos 925, 924.

AUXILIARY PATROL CRAFT

DKN 901	DKN 902	DKN 903	DKN 904	DKN 905
Displacement, tons	140			
Dimensions, feet	128 × 19 × 5.2			
Guns	4—20 mm AA			
Main Engines	Maybach diesels; 2 shafts; 3 000 bhp = 24.5 knots			

Patrol craft and police boats. Projected as a class of ten units. 901, 902 and 904 were built by Lürssen, Vergesack, 903 and 905 by Abeking & Rasmussen Lemwerder.

KELABANG

Displacement, tons	147
Main engines	2 diesels; speed 21 knots

Launched on 22 Aug 1960 at Surabaya. A sister ship was to be built.

PAT 01	PAT 02	PAT 03	PAT 04	PAT 05	PAT 06
Dimensions, feet	91.9 pp; 100 oa × 17 × 6				
Main Engines	2 Caterpillar diesels; 340 bhp				

6 "Balam" Class

BALAM	BARAU	BEKAKA	BELATIK	BENDALU	BOGA
Measurement, tons	200 gross				
Dimensions, feet	125.2 oa × 21.3 × 6.5				
Main Engines	Werkspoor diesel engine; 400-430 bhp = 11 knots				

All launched in 1953. Balam and others were commissioned for service in 1953.

7 "Bango" Class

BANGO	BABUT	BEO	BETTET	BIDO	BLEKOK	BLIBIS
Measurement, tons	194 gross					
Dimensions, feet	120.5 pp; 125.2 oa × 21.3 × 6.6					
Main Engines	Werkspoor diesel engine; 430 bhp = 11 knots					

All launched in 1952. A photograph of Bettet appears in the 1953-54 to 1960-61 editions.

7 "Durian" Class

DAIK	DAGONG	DAMARA	DATA	DUATA	DUKU	DURIAN
Displacement, tons	90					
Dimensions, feet	78.2 × 16 × 6.8					
Main Engines	Caterpillar diesel; 190 bhp					

All launched in 1952.

12 "Alkai" Class

ALKAI	ALULU	AMPIS	ANKANG	ANTANG	ARYAT
ALLAP	AMPOK	ANDIS	ANKLOENG	AROKWES	ATTAT
Displacement, tons	143; 247 full load				
Dimensions, feet	124.3 × 18.5 × 5.5				
Guns	1—37 mm AA; 4 MG				
Main engines	Enterprise diesel; 400-450 = 12 knots				
Complement	20				

Built in the Netherlands. Ampok and Alkai were shipped to Indonesia on 17 Mar 1950.

3 Ex-U.S. SC Type

BHAYAMKARA I	BHAYAMKARA II	BHAYAMKARA III
Displacement, tons	116 (trials); 148 full load	
Dimensions, feet	107.5 wl; 110.8 oa × 17 × 6.5	
Main Engines	Diesel; 800 bhp = 15.5 knots	

Former US submarine chasers of the 110 SC type. Operated by Indonesian Marine Police. A photograph appears in the 1954-55 to 1960-61 editions.

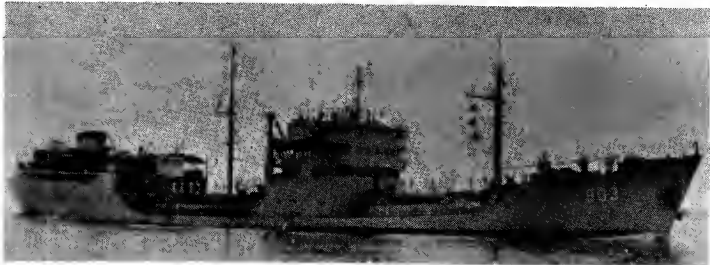
MERABU (ex-Merbaboe)	RINDJANI
Displacement, tons	80
Dimensions, feet	74.5 × 14.5 × 5
Main Engines	Diesel; 135 bhp = 10 knots
Complement	20

OILERS

2 Ex-U.S.S.R. Type

BUNJU	SAMBU
Displacement, tons	2 170 standard; 6 170 full load
Dimensions, feet	350.5 × 49.2 × 20.2
Guns	2—20 mm
Main Engines	Polar diesel; 1 shaft; 2 650 bhp = 10 knots
Oil fuel (tons)	390
Cargo capacity	4 739 tons
Complement	71

Former Soviet tankers transferred to the Indonesian Navy on 29 June 1959. Pennant Nos. 904 and 903.



SAMBU 1961, Indonesian Navy, Official

TJEPU (ex-Scandus, ex-Nordhem)

Displacement, tons	1 372
Measurement, tons	1 042 gross
Dimensions, feet	226.5 × 34 × 14.2
Main Engines	Polar diesel; 1 shaft; 850 bhp = 11 knots

Built in Sweden in 1949. Acquired in 1951. Pennant No. 901.

PLADJU

Displacement, tons	1 412 standard; 4 062 full load
Dimensions, feet	294.7 × 42.2 × 15.5
Guns	2—20 mm
Main Engines	Compound engines; 1 700 ihp = 10 knots
Oil fuel (tons)	449
Cargo capacity, tons	3 132
Complement	70

Purchased from Singapore in 1958. Pennant No. 902.

SALVAGE VESSEL

TRITON (ex-Mutsunoura Maru)

Displacement, tons	384
Measurement, tons	383 gross
Dimensions, feet	182.5 × 30 × 15
Main Engines	Triple expansion reciprocating; 700 ihp = 7 knots
Complement	43

Former Japanese vessel renamed. Launched in 1941. Pennant No. 926.

TUGS

RAKATA (ex-USS Menominee, ATF 73)

Displacement, tons	1,235 standard; 1,675 full load
Dimensions, feet	195 wl; 205 oa × 38.5 × 15.5 max
Guns	1—3 in; 4—40 mm AA; 2—20 mm AA
Main engines	4 diesels with electric drive; 3 000 bhp = 16.5 knots
Complement	85

Former American fleet ocean tug of the "Apache" class. Launched on 14 Feb 1942. Transferred from the United States Navy to the Indonesian Navy at San Diego in Mar 1961. Pennant No. 928.

LAMPO BATANG

Displacement, tons	250
Dimensions, feet	92.3 oa; 86.7 pp × 23.2 × 11.3
Main engines	2 diesels; 1 200 bhp = 11 knots
Oil fuel (tons)	18
Radius, miles	1 000 at 11 knots
Complement	43

Ocean tug. Built in Japan. Launched in April 1961. Delivered in Nov 1961. Pennant No. 934.

GANDENG

Measurement, tons	610 gross
Main Engines	Speed = 7.5 knots

Launched in 1940. Reported to have been given a new Indonesian name.

BROMO

TAMBORA

Displacement, tons	150
Dimensions, feet	71.7 wl; 79 oa × 21.7 × 9.7
Main Engines	MAN diesel; 2 shafts; 600 bhp = 10.5 knots
Oil fuel (tons)	9
Radius, miles	690 at 10.5 knots
Complement	15

Harbour tugs. Built in Japan. Launched in June 1961. Delivered in Aug 1961. Pennant Nos 936 and 935.

IRAN (PERSIA)

Strength of the Fleet

1 Destroyer	23 Patrol Boats
1 Frigate	4 Landing Craft
3 Corvettes	1 Support Ship
6 Minesweepers	8 Auxiliaries

Administration

Chief of Staff, Imperial Iranian Navy:
Admiral F. Rasa'i

Diplomatic Representation

Naval, Military and Air Attaché in London:
Colonel G. H. Aghakhani Afshar

Naval, Military and Air Attaché in Washington:
Lieutenant Colonel Abbas Eshraghi

DESTROYER

Name	Builders	Laid down	Launched	Completed
ARTEMIS (ex-HMS <i>Sluys</i> , D 60)	Cammell Laird & Co Ltd, Birkenhead	24 Nov 1943	28 Feb 1945	30 Sep 1946

1 Ex-British "Battle" Class

Displacement, tons	2 325 standard; 3 361 full load
Length, feet (metres)	355 (107.2) pp; 379 (115.5) oa
Beam, feet (metres)	40.3 (12.3)
Draught, feet (metres)	17 (5.2) props
Guns, surface	4—4.5 in (115 mm); 2 twin turrets forward
Guns, AA	8—40 mm
Missile launchers	1 quadruple "Seacat"
Main engines	Parsons geared turbines; 2 shafts; 50 000 shp
Speed, knots	31 sustained sea

Handed over to the Imperial Iranian Navy at Southampton on 26 Jan 1967, and taken in hand for major refit and modernisation by the Vosper Thornycroft Group, see artist's impression of her appearance on completion.



ARTEMIS 1967, courtesy Vosper Thornycroft Group

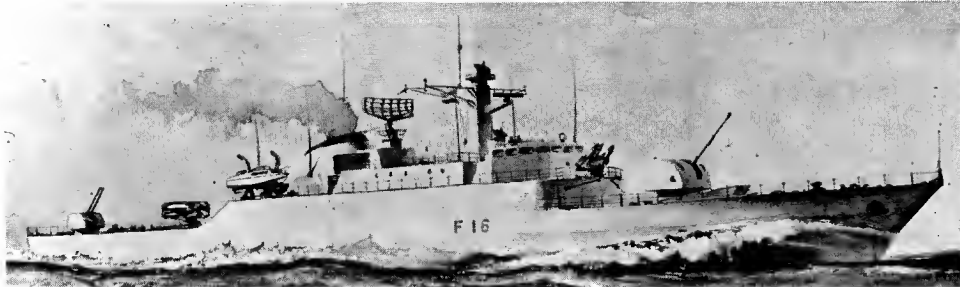
FRIGATES

New Construction

4 Vosper Mk 5 Frigate Type

Displacement, tons	1 200 approx, official figure
Length, feet (metres)	310 (94.4) oa
Main engines	2 Bristol Siddeley "Olympus" gas turbines; 2 Paxman diesels; 2 shafts
Missile launchers	1 quadruple "Seacat"
A/S weapons	Depth charge projector

It was announced on 25 Aug 1966 that Vosper Ltd, Portsmouth, had received an order for four "destroyers" for the Iranian Navy. Two are being built by Thornycroft Southampton, and two by Vickers, Newcastle. Of small frigate type (improved and considerably enlarged corvette type), one main gun forward, two secondary guns aft, anti-aircraft and anti-submarine weapons, high speed from gas turbines, with diesels for long range cruising. Air conditioned throughout, and fitted with Vosper stabilisers. The first ship of the class was laid down at Woolston Yard of Thornycroft on 22 May 1967.



Mk 5 Frigate 1967, courtesy Vosper Ltd, Portsmouth

Name	Builders	Laid down	Launched	Completed
BABR (ex-HMS <i>Derby Haven</i> , ex- <i>Loch Assynt</i>)	Swan, Hunter & Wigham Richardson, Ltd Wallsend on-Tyne	11 Feb 1944	14 Dec 1944	2 Aug 1945

1 Ex-British "Loch" Type

Displacement, tons	1 650 standard; 2 160 full load
Length, feet (metres)	286 (87.2) pp; 309 (94.2) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	14.5 (4.4) max
Guns, surface	2—4 in (102 mm)
Guns, AA	4—40 mm
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	19.5
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	725
Complement	140

Modified "Loch" class frigate acquired from Great Britain in 1949. "Babr" means "Panther".



BABR Added 1966, courtesy Dr Giorgio Arra

2+2 U.S. PF Type

BAYANDOR (ex-PF 103) F 25	PF 105
HAGNDI (ex-PF 104) F 26	PF 106

Displacement, tons	900 standard; 1 135 full load
Length, feet (metres)	275 (83.8) oa
Beam, feet (metres)	33 (10.0)
Draught, feet (metres)	10 (3.0)
Guns, surface	2—3 in (76 mm)
Guns, AA	2—40 mm
Main engines	6 000 bhp F-M diesels
Speed, knots	20
Complement	140

Built by the Livingstone Shipbuilding Co, Orange, Texas, for transfer from the US to Iran under MAP, *Bayandor* was laid down on 20 Aug 1962 for launch in July 1963, and *Naghd* was laid down on 12 Sep 1962 for launch in Oct 1963. *Bayandor* was transferred to the Iranian Navy on 18 May 1964 at Charleston, SC and *Naghd* on 22 July 1964. PF 105 and PF 106 are building at Orange for Iran for delivery on 24 Nov 1968 and 24 Jan 1969, respectively.



BAYANDOR 1964, James F. Ryan Jr

CORVETTES

1 Ex-British "Algerine" Type
Escort Minesweeper

Displacement, tons	1 040 standard; 1 335 full load
Length, feet (metres)	212.5 (64.5) pp; 225 (68.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	10.5 (3.2)
Guns, surface	2—4 in (102 mm)
Guns, AA	4—40 mm
A/S	2 DCT
Boilers	2 3-drum
Main engines	Triple expansion
	2 000 ihp; 2 shafts
Speed, knots	16.5
Radius, miles	5 000 at 10 knots
Oil fuel (tons)	270
Complement	85

Former "Algerine" class ocean minesweeper and escort vessel acquired from Great Britain in 1949. "Palang" means "Tiger".

Name
PALANG (ex-HMS *Fly*)

Builders
Lobnitz & Co Ltd, Renfrew

Laid down
6 Oct 1941

Launched
1 June 1942

Completed
10 Oct 1942



PALANG

1966, Official

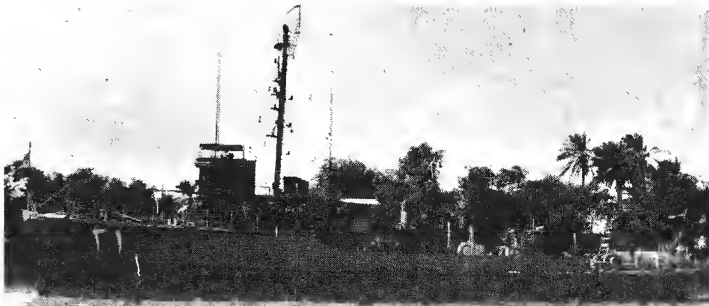
COASTAL MINESWEEPERS

KARKAS (ex-USS *MSC 292*)
SHAHBAZ (ex-USS *MSC 275*)

SHAHROKH (ex-USS *MSC 276*)
SOMORGH (ex-USS *MSC 291*)

Displacement, tons	320 light; 378 full load
Dimensions, feet	138 pp; 145.8 oa × 28 × 8.3
Guns	1—20 mm
Main Engines	2 GM diesels; 2 shafts; 890 bhp = 12.8 knots
Oil fuel (tons)	27
Radius, miles	2 400 at 11 knots
Complement	40 (4 officers, 2 midshipmen, 34 men)

Built by Bellingham Shipyards Co (*Shahbaz* and *Shahrokh*), Petersen Builders Inc. (*Karkas*) and Tacoma Boatbuilding Co. (*Simorgh*). Of wooden construction. Launched in 1958-61 and transported from US to Iran under MAP in 1959-62. "Shahbaz" means Eagle and "Shahrokh" means Bird of Prey.



SHAHROKH

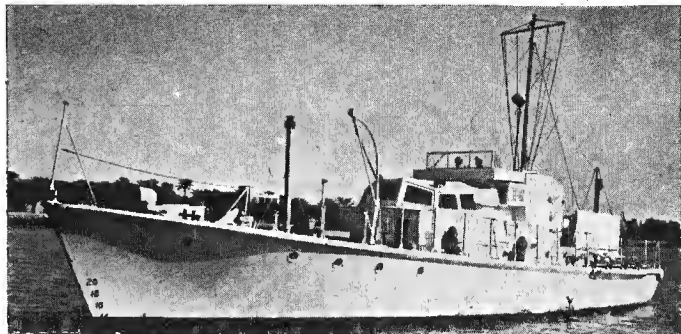
1966, Official

SEAWARD DEFENCE CRAFT
2 Ex-British HDML Type

ASALON (ex-HMS *SML 323*, ex-HDML 1081)
TAHMADOU FDB 65 (ex-FDB 58, ex-HMS *SDML 1389*)

Displacement, tons	46 standard; 58 full load
Dimensions, feet	72 × 16 × 5
Guns	8 MG
Main Engines	Diesel; 320 bhp = 12 knots
Complement	10

Former British motor launches of the harbour (seaward) defence type. *SML 323* (last employed on survey duties) was transferred from the British Navy to the Iranian Navy at Khorramshahr on 21 June 1956. Employed as despatch boats.



ASALON

1957, Official

COASTGUARD CUTTERS
9 "Azar" Class

AZAR **DARAKHSH** **PEYKAN** **TONDAR** **TOUSAN**
CHAHAB **NAVAK** **TONDBAD** **TOUFAN**

Displacement, tons	65 standard; 90 full load
Dimensions, feet	90 × 16 × 9
Guns	MG
Main Engines	2 diesels; speed = 22 knots

Built by Cant Nav INMA, La Spezia. Transferred to the Coast Guard in 1958. A photograph of *Azar* appears in the 1955-56 to 1963-64 editions.

PATROL BOATS

KEYVAN (MDA1)

MAHAN

MEHRAN

TIRAN

Displacement, tons	85 standard; 107 full load
Dimensions, feet	90 pp; 95 oa × 20.2 × 6.8 max
Guns	1—40 mm AA
A/S weapons	8-barrelled 7.2 in projector, 8—300 lb depth charges
Main Engines	4 Cummins diesels; 2 shafts; 2 200 bhp = 20 knots
Radius, miles	1 500 cruising range
Complement	15

Keyvan, built in USA in 1955, was delivered to Iran on 14 Jan 1956. In the Persian Gulf. *Tiran* was built by the US Coast Guard at Curtis Bay, Maryland, and transferred to Iran in 1957. *Mahan* and *Mehran* were delivered to Iran in 1959. PGM 103 is building in USA for transfer to Iran under MAP.



KEYVAN

1957, Official

MOTOR LAUNCHES

BABOLSA

GORGAN

SEFIDROUDE

Displacement, tons	28 to 32
Dimensions, feet	68.5 × 12.5 × 5.2
Guns	1—47 mm (Skoda); 1 MG
Main Engines	2 Krupp diesels; 2 shafts; 300 bhp = 14 knots

Built in 1935 by Cant Nav Riuniti Palermo, Italy. Employed in the Caspian Sea.

MAHNAVI-HAMRAZ
MAHNAVI-TAHERI

MAHNAVI-VAHEDI
MARDJAN

MORVARID
SADAF

Displacement, tons	10
Dimensions, feet	40 × 11 × 3.7
Guns	MG
Main Engines	2 General Motors diesels.

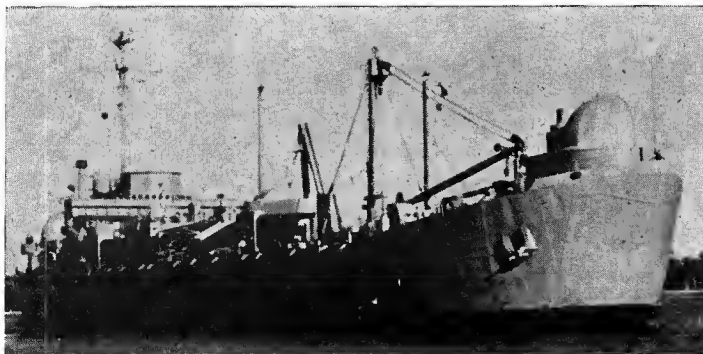
REPAIR SHIP

1 Ex-U.S. ARL (Ex-LST) Type

SOHRAB (ex-USS *Gordius*, ARL 36, ex-LST 1145)

Displacement, tons	1 625 light; 4 100 full load
Dimensions, feet	316 wl; 328 oa × 50 × 11.2
Guns	8—40 mm AA
Main Engines	GM diesels; 2 shafts; 1 800 bhp = 11.6 knots

Former US repair ship for landing craft. Built by Chicago Bridge & Iron Co, Seneca Ill. Laid down on 5 Feb 1945. Launched on 7 May 1945. Completed on 18 May 1945. Transferred by the USA under the Military Aid Programme in Sep 1961.



SOHRAB

1964, Official

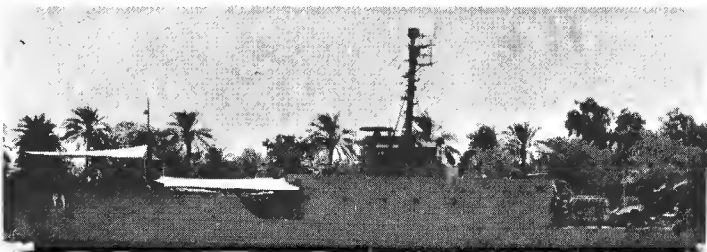
LANDING CRAFT

3 Ex-U.S. LSIL Type

GHASM (ex-USS *LS/L*) **LARAK** (ex-USS *LSIL* 710) 42
HENGAM (ex-French *LSIL* 9037, ex-USS *LSIL* 768) 41

Displacement, tons 210 light; 393 full load
Dimensions, feet 153 wl; 159 oa x 23·7 x 5·7 max
Guns 4—20 mm AA
Main Engines GM diesels; 2 shafts; 1 800 bhp = 14·4 knots
Oil fuel (tons) 80
Radius, miles 5 000 at 12 knots
Complement 40

Former US Landing Ships, Infantry, Large, built in 1944. *LSIL* 768 was ceded by USA to France in 1953 for service in Indo-China, given back to USA in 1957 and then transferred to Iran. *LSIL* 710 was loaned by USA in 1959. *Ghasm* was added to the fleet in 1964. USS *LCU* 1431 was transferred to Iran by US in 1964.



LARAK 1963, Official

INSHORE MINESWEEPERS

2 U.S. MSI Type

KAHNAMUIE 301 (ex-*MSI* 14) **RIAZI** 302 (ex-*MSI* 13)

Displacement, tons 180 standard; 235 full load
Dimensions, feet 111 x 23 x 6
Main Engines Diesels; 650 bhp = 13 knots
Complement 23 (5 officers, 18 men)

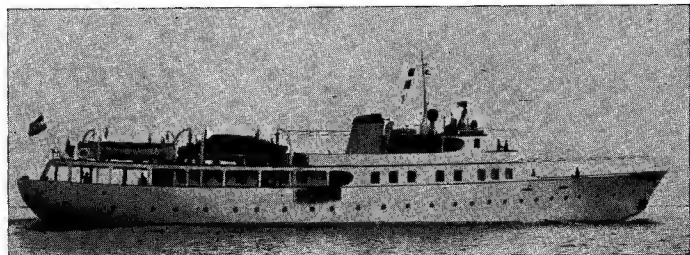
Built in USA by Tacoma Boat Building Co for delivery to Iran under MAP. Laid down on 22 June 1962 and 1 Feb 1963, and transferred at Seattle, Washington, on 3 Sep 1964 and 15 Oct 1964, respectively.

IMPERIAL YACHT

CHASAVAR

Displacement, tons 530
Dimensions, feet 176 x 25·3 x 10·5
Main Engines 2 sets diesels; 1 300 bhp

Built by N. V. Boele's Scheepswerven, Boines, Netherlands. Engined by Gebr Stork of Hengelo. Launched in 1936. In the Caspian Sea.



CHASAVAR 1958, Imperial Iranian Navy, Official

OILERS

HENGHEH **HORMUZ** YO 247

Displacement, tons 1 250 standard; 1 700 full load
Dimensions, feet 171·2 wl; 178·3 oa x 32·2 x 14
Main Engines 1 Ansaldo Q 370, 4 cycle diesel

Hormuz was built by Cantiere Castellamare di Stabia. Own oil fuel; 25 tons. Cargo oil capacity 5 000 to 6 000 barrels. *Hengheh* was added to the Fleet in 1964. A photograph of *Hormuz* appears in the 1957-58 to 1959-60 editions.

WATER TANKER. USS *YW* 88 was transferred to Iran by US in 1964.

TENDER

SIRRY (ex-*MVF* 1513)

Length, feet 90

Purchased from Great Britain in 1949. Rated as a "Fire Extinguishing Boat".

TUG

YADAK BAR (ex-*Neyrou*)

Displacement, tons 226
Dimensions, feet 81 pp; 88·5 oa x 22 x 10
Main Engines Triple expansion; 600 ihp = 11 knots

Built by Cant Nav Riuniti, Ancona. Launched on 9 Dec 1944. In Persian Gulf.

IRAQ

PATROL VESSELS

3 Ex-U.S.S.R. "S.O.I." Type

Displacement, tons 215 light; 220 normal
Dimensions, feet 138 pp; 147 oa x 20 x 10 max
Guns 4—25 mm AA
A/S weapons 4 five-barrelled ahead-throwing rocket launchers.
Main Engines 3 diesels; 3 500 bhp = 25 knots

Former Soviet submarine chasers delivered by the USSR to Iraq in 1962.

MOTOR TORPEDO BOATS

12 Ex-U.S.S.R. "P 6" Type

Displacement, tons 50
Dimensions, feet 82 x 20 x 6
Guns 4—13 mm AA MG
Tubes 2—21 in
Main Engines Speed = 40 knots

Presented by the USSR. Two were received in 1959, four in Nov 1960, and six in Jan 1961. Some remain non-operational. Six small patrol boats are also reported to have been delivered by the USSR.

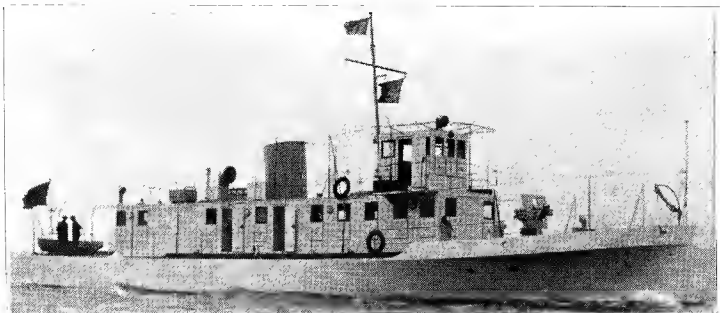
PATROL BOATS

No. 1 No. 2 No. 3 No. 4

Displacement, tons 67
Dimensions, feet 100 x, 17 x 3 mean
Guns 1—3·7 in howitzer; 2—3 in mortars; 4 MG
Main Engines 2 Thornycroft diesels; 2 shafts; 280 bhp = 12 knots

Protected by bullet-proof plating. All built by John I. Thornycroft & Co Ltd, Woolston, Southampton. All launched, completed and delivered in 1937.

Eight patrol boats of 36 feet in length with a diesel of 125 bhp and four 21 ft pilot despatch launches with a diesel of 40 bhp were built by John I Thornycroft & Co for the Iraqi Ports Administration.



No. 1 John I. Thornycroft & Co. Ltd

LIGHTHOUSE TENDER

FAISAL 1 (ex-*Sans Peur*, ex-*Restless*)

Displacement, tons 1 025
Dimensions, feet 186 x 29·5 x 14·5
Main Engines Triple expansion; 2 shafts; 850 ihp = 13 knots
Boilers 1 oil-fired

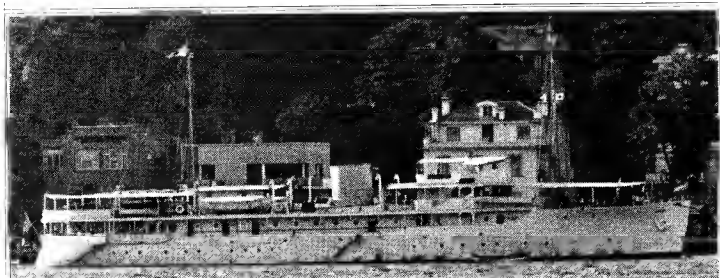
Former Royal Yacht. Designed by G. L. Watson Ltd. Built by John Brown & Co Ltd, Clydebank. Launched in 1923. A photograph appears in the 1937 to 1959-60 editions.

PRESIDENTIAL YACHT

AL THAWRA (ex-*Melike Aliye*)

Displacement, tons 746
Main Engines Diesels; 2 shafts; 1 800 shp = 14 knots

Royal Yacht before assassination of King Faisal II in 1958, after which she was renamed *Al Thawra* (*The Revolution*) instead of *Melike Aliye* (*Queen Aliyah*)



AL THAWRA Added 1966, Aldo Fraccaroli

TUG

ALARM (ex-*St Ewe*)

Displacement, tons 570 standard; 820 full load
Dimensions, feet 135 x 30 x 14·5
Main Engines Triple expansion; 1 shaft; 1 200 ihp = 12 knots
Boilers 2 oil-fired

Former British "Rescue" type tug of the "Saint" class. Built by Murdock & Murray. Launched in 1919.

ISRAEL

Strength of Fleet

- 4 Submarines (Diesel Powered)
- 3 Destroyers (1 Escort Type)
- 9 Motor-Torpedo Boats
- 2 High Speed Gun Boats
- 5 Patrol Vessels (1 Submarine Chaser)
- 6 Amphibious Craft

Diplomatic Representation

Naval, Military and Air Attaché in London:
Brigadier-General Z. Zamir

Naval, Military and Air Attaché in Washington:
Brigadier-General Joseph Geva

Administration

Commander-in-Chief of the Israeli Navy:
Commodore Shlomo Erel

Mercantile Marine

Lloyd's Register of Shipping:
104 vessels of 558, 118 tons gross

SUBMARINES

2 Ex-British "T" Class

Displacement, tons 1 280 standard; 1 505 surface;
1 700 submerged

Length, feet (metres) 285.5 (87.0) oa

Beam, feet (metres) 26.5 (8.1)

Draught, feet (metres) 14.8 (4.5)

Torpedo tubes 6—21 in (533 mm) 4 bow 2 stern

Main engines 2 500 hp diesels (surface); 2 900
hp electric motors (submerged)

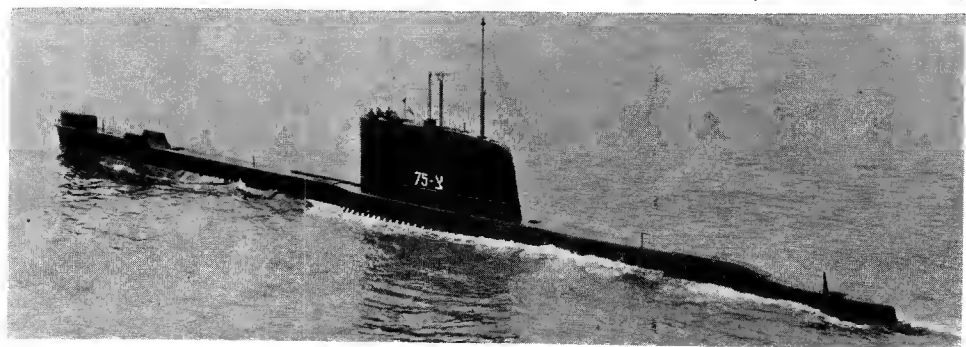
Speed, knots 15.25 on surface; 15 submerged

Complement 65

Acquired from Great Britain (announced Nov 1964)
Handed over to Israel after refit in HM Dockyard,
Portsmouth. *Dakar* means Shark. *Leviathan* Whale.

A photograph of *Dakar* before reconstruction appears in
the 1966-67 edition.

Name	Builders	Laid down	Launched	Completed
LEVIATHAN (ex-HMS <i>Turpin</i>)	HM Dockyard Chatham	24 May 1943	5 Aug 1944	18 Dec 1944
DAKAR (ex-HMS <i>Totem</i>)	HM Dockyard Devonport	22 Oct 1942	28 Sep 1943	9 Jan 1945



LEVIATHAN (reconstructed)

1967, Skyfotos

2 Ex-British "S" Class

Displacement, tons 715 standard; 814 surface;
1 000 submerged

Length, feet (metres) 202.5 (61.7) pp; 217 (66.2) oa

Beam, feet (metres) 23.8 (7.2)

Draught, feet (metres) 10.5 (3.2)

Guns, surface 1—4 in (102 mm)

Torpedo tubes 6—21 in (533 mm)

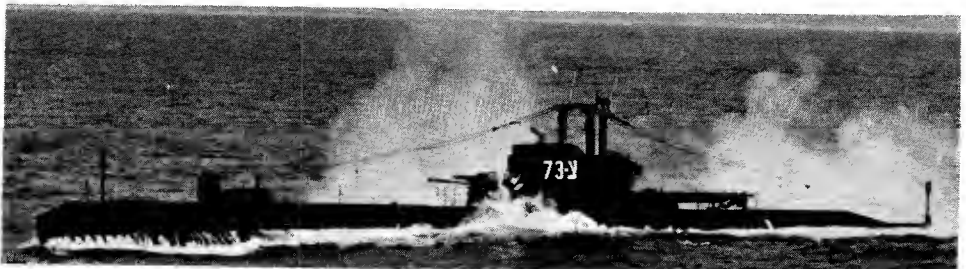
Main engines 1 900 hp diesels (surface); 1 300
hp electric motors (submerged)

Speed, knots 14.7 on surface; 9 submerged

Complement 57

Purchased by Israel in Oct 1958. *Springer* was handed
over to the Israeli Navy at Portsmouth on 9 Oct 1958
and renamed *Tanin* (Crocodile). Both were refitted in
Great Britain before delivery to Israel in May 1960
(*Rahav*) and Dec 1959 (*Tanin*). They are fitted with
"Snort" mast and sonar domes. A photograph of
Tanin appears in the 1961-62 to 1965-66 editions.

Name	No	Builders	Laid down	Launched	Completed
RAHAV (ex HMS <i>Sanguine</i>)	73	Cammell Laird Birkenhead	10 Jan 1944	15 Feb 1945	13 May 1945
TANIN (ex-HMS <i>Springer</i>)	71	Cammell Laird Birkenhead	8 May 1944	14 May 1945	2 Aug 1945



RAHAV

1966, Israeli Navy, Official

DESTROYERS

Name	No.
ELATH (ex-HMS <i>Zea/ous</i>)	40
YAFFO (ex-HMS <i>Zodiac</i>)	42

Builders	Laid down	Launched	Completed
Cammell Laird & Co Ltd, Birkenhead	5 May 1942	28 Feb 1944	9 Oct 1944
John I. Thornycroft & Co, Ltd Southampton	7 Nov 1942	11 Mar 1944	25 Oct 1944

2 Ex-British "Z" Class

Displacement, tons 1 710 standard; 2 555 full load

Length, feet (metres) 362.2 (110.4) oa

Beam, feet (metres) 35.5 (10.8)

Draught, feet (metres) 17 (5.2)

Guns, dual purpose 4—4.5 in (115 mm)

Guns, AA 6—40 mm

A/S 4 DCT

Torpedo tubes 8—21 in (533 mm)

Boilers 2 Admiralty 3-drum

Main engines Parsons geared turbines
40 000 shp; 2 shafts

Speed, knots 31

Complement 250

Transferred to Israel on 15 July in Cardiff Docks. Refitted
before going to Israel in 1956, *Elath* by Harland & Wolff
in Langton Dock, Liverpool, *Yaffo* by Crichtons in
Trafalgar Dock, Liverpool. A photograph of *Yaffo*
appears in the 1964-65 to 1966-67 editions.



ELATH

1967, A. & J. Pavia

Name	No.
HAIFA (ex-Ibrahim el Awal, ex-Lin Fu, ex-Mendip)	38

Builders	Laid down	Launched	Completed
Swan, Hunter & Wigham Richardson, Ltd Wallsend	10 Aug 1939	9 Apr 1940	12 Oct 1940

1 Ex-Egyptian "Hunt" Class Escort

Displacement, tons 1 000 standard; 1 490 full load

Length, feet (metres) 273.3 (83.3) pp; 280 (85.3) oa

Beam, feet (metres) 29 (8.8)

Draught, feet (metres) 7.8 (2.4) mean; 14 (4.3) max

Guns, surface 4—4 in (102 mm)

Guns, AA 2—40 mm; 3—20 mm

A/S 2 DCT

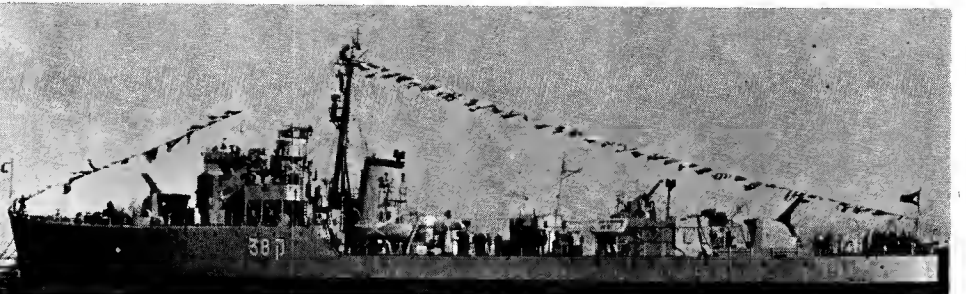
Boilers 2 three-drum type

Main engines Parsons geared turbines
19 000 shp; 2 shafts

Speed, knots 25

Complement 190

Former escort destroyer, later reclassified as anti-aircraft
frigate of the British "Hunt" class, Type 1. Engined by
the Wallsend Slipway & Engineering Co Ltd, Wallsend-
on-Tyne. Classified by Israel as a destroyer.



HAIFA

1966, Israeli Navy, Official

HISTORY: This ship, first named *Mendip*, served with
the British Navy from Oct 1940 until May 1948 when she
was transferred to the Chinese Navy and renamed *Lin Fu*.
She was returned to the British Navy at Hong Kong a
year later and reverted to the name *Mendip* but was

transferred to the Egyptian Navy in Nov 1949 and
renamed *Mohamed Ali el Kebir* but was again renamed
Ibrahim el Awal in 1951. She was captured from Egypt
off Haifa by Israeli forces on 31 Oct 1956 and renamed
Haifa. Commissioned in the Israeli Navy in Jan 1957.

HIGH SPEED GUN BOATS

New Construction "Saar" Type

Displacement, tons	220 standard; 240 full load
Dimensions, feet	147.6 oa × 23 × 5.9
Guns, AA	3—40 mm
Torpedo armament	2 side launchers for 21 inch torpedoes (surface or anti-submarine)
Main Engines	4 diesels; 13,500 bhp total = over 40 knots
Complement	40

It was officially stated in Mar 1967 that Israel was building some high speed gun boats which will be known as "Saar" type. The above particulars and figures were officially furnished.

PATROL VESSEL

NOGAH (ex-USS PC 1188) P 22

Displacement, tons	295 standard; 450 full load
Dimensions, feet	170 pp; 173.7 oa × 23 × 10
Guns	1—4 in; 1—40 mm AA; 3—20 mm AA
A/S	4 DCT
Main Engines	2 diesels; 2 shafts; 1 764 bhp = 18 knots
Complement	70

Former United States patrol vessel (submarine chaser) of the Steel hulled PC type.



NOGAH

1966, Israeli Navy, Official

MOTOR TORPEDO BOATS

OPHIR T 150

SHVA T 151

TARSHISH T 152

Displacement, tons	40
Dimensions, feet	70 × 17 × 5
Guns	1—40 mm AA; 2—20 mm AA
Torpedoes	2—17.7 in
Main Engines	High octane petrol engines; 4 000 bhp = 40 knots.

Motor Torpedo Boats/Gunboats built for the Israeli Navy by Cantieri Baglietto, Varrazze, Italy, in 1956-57.



SHVA

1964, Israeli Navy, Official

AYAH T 200 BAZ T 201

DAYA T 202 PERESS T 203

TAHMASS T 204 YASOOR T 205

Displacement, tons	62 standard
Dimensions, feet	85.3 oa × 20.7 × 5
Guns	1—40 mm; 4—20 mm AA
Torpedoes	2—17.7 in
Main Engines	2 Napier Deltic diesels; 2 shafts; 4 600 bhp = 42 knots
Complement	15

Built by Chantiers de Meulan, France. Launched in 1950-56. Photographs appear of T 208 in the 1953-54 to 1957-58 editions, of T 207 in the 1953-54 to 1960-61 editions, and of Peress in the 1961-62 to 1964-65 editions.

The three old motor torpedo boats *Lilitt*, T 209; *Shaldagg*, T 210; and *Tinshemett*, T 212, built by Vosper Ltd, Portsmouth, in 1942, are reported to be no longer in service.



TAHMASS

1965, Israeli Navy, Official

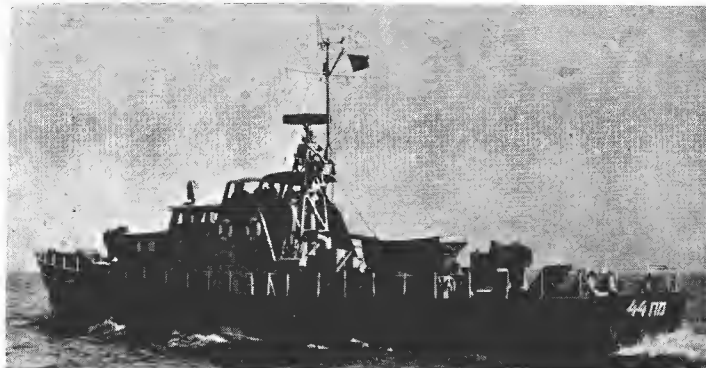
PATROL BOATS

YARDEN 42

YARKON 44

Displacement, tons	96 standard; 109 full load
Dimensions, feet	100 × 20 × 6
Guns	2—20 mm AA
Main Engines	Diesels; 2 shafts; speed 22 knots
Complement	16

Both built by Yacht & Bootswerft, Burmester Bremen-Burg, Germany. *Yarkon* was launched on 25 July 1956 and *Yarden* in 1957. A photograph of *Yarden* appears in the 1961-62 to 1965-66 editions.



YARKON

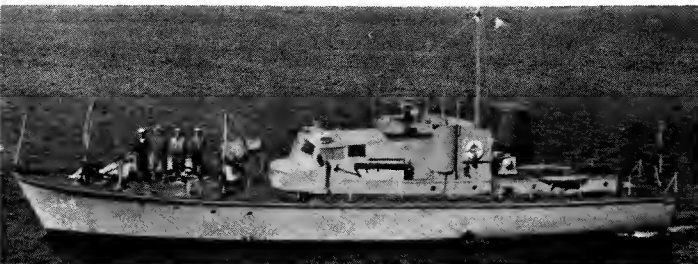
1966, Israeli Navy, Official

DROR 21

TIRTSA 25

Displacement, tons	46 standard; 54 full load
Dimensions, feet	72 oa × 16 × 5.5
Guns	2—20 mm AA
A/S	8 DC
Main Engines	2 diesels; 2 shafts; 320 bhp = 12 knots
Complement	12

Former British harbour defence motor launches. Built in Great Britain in 1943.



TIRTSA

Israeli Navy, Official

LANDING CRAFT

3 Israeli New Construction

LC 51

LC 53

LC 55

Displacement, tons	122
Dimensions, feet	100 × 19.4 × 4
Guns, AA	2—20 mm
Main Engines	2 diesels; 1 280 bhp = 10 knots
Complement	12

It was officially stated in Mar 1967 that in lieu of the landing craft of the LCI and LCT types, which were taken out of commission for disposal (with the exception of one LCT, which was given to the Israeli National Museum in Haifa) three new landing craft have been built in the Israeli Dockyard.



LC

1967, Israeli Navy, Official

LCM

Displacement, tons	22 tons standard; 60 full load
Dimensions, feet	50 × 14 × 3.2
Main Engines	2 diesels; 450 bhp = 11 knots

Former United States vessels of the LCM (Landing Craft Mechanised) type.



LCM

1966, Israeli Navy, Official

ITALY

Administration

Chief of Naval Staff:
Ammiraglio di Squadra Alessandro Michelagnoli
Commander, Allied Naval Forces, Southern Europe (Commander Navy South, Malta):
Ammiraglio di Squadra Luciano Sotgiu
Military Adviser to the President:
Ammiraglio di Squadra Virgilio Spigai
Commander-in-Chief of Fleet:
Ammiraglio di Squadra Giuseppe Roselli Lorenzini
Director General Navy Personnel:
Ammiraglio di Squadra Gino Birindelli
Deputy Chief of Naval Staff:
Ammiraglio di Squadra Francesco Brunetti

Diplomatic Representation

Naval Attaché in London:
Rear Admiral Vittorio Patrelli Campagnano ItN
Naval Attaché in Washington:
Captain Arrigo Barbi, ItN

Strength of the Fleet

- 6 Diesel Powered Submarines
- 4 Guided Missile Armed Cruisers
- 2 Guided Missile Armed Destroyers
- 2 Destroyer Leaders (ex-Light Cruisers)
- 4 Destroyers
- 9 Frigates
- 25 Corvettes
- 4 Ocean Minesweepers
- 37 Coastal Minesweepers
- 8 Motor Gunboats
- 8 Motor Torpedo Boats
- 20 Inshore Minesweepers
- 140 Support Ships and Service Craft

Navy Estimates

- 1964: 87,375,934,000 Lire
- 1965: 177,633,679,000 Lire
- 1966: 201,333,181,000 Lire
- 1967: 213,557,581,000 Lire

New Construction Programme

- 2 Oceangoing Hunter Killer Submarines
- 4 Coastal Hunter Killer Submarines
- 2 Guided Missile and Helicopter Cruisers
- 2 Guided Missile Armed Destroyers
- 2 General Purpose Frigates
- 1 Corvette
- 3 Landing Ships
- 1 Nuclear Powered Fast Fleet Replenishment Ship of new design

Personnel

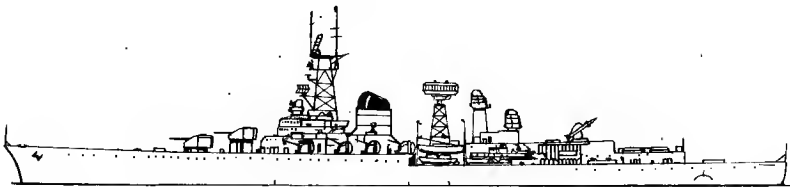
- 1964: 38,000 officers and ratings
- 1965: 39,000 officers and ratings
- 1966: 39,000 officers and ratings
- 1967: 40,000 officers and ratings

Mercantile Marine

Lloyd's Register of Shipping:
1,403 vessels of 5,850,921 tons gross

Silhouettes

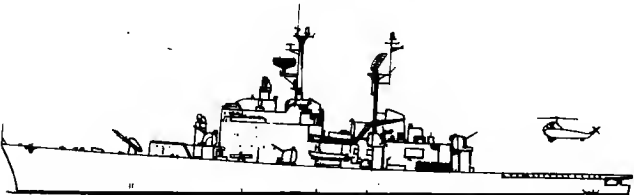
Scale: 150 feet = 1 inch



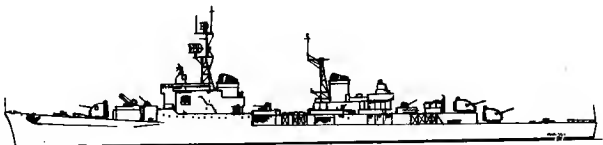
GIUSEPPE GARIBALDI



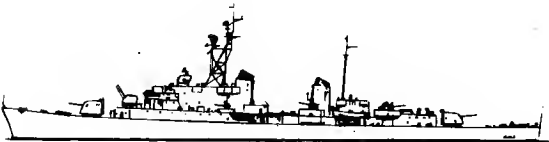
IMPAVIDO, INTREPIDO



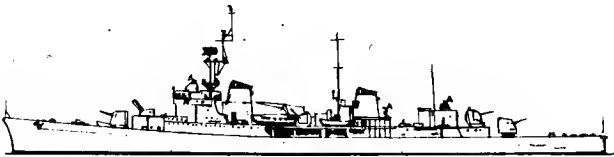
ANDREA DORIA, CAIO DUILIO



SAN MARCO



IMPETUOSO, INDOMITO



SAN GIORGIO



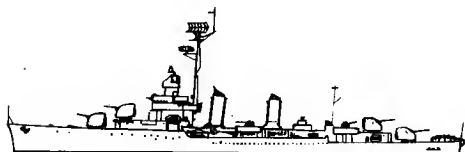
ALPINO, CARABINIERE



BERGAMINI Class



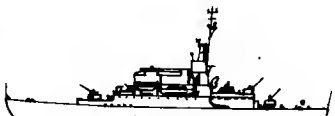
ALTAIR Class



ARTIGLIERE



CENTAURO Class as converted



ALBATROS Class



AVIERE



DE CRISTOFARO Class



APE Class

SUBMARINES

2 Projected

Submarine Killer Type, SSK

Displacement, tons 1 370 (official figure)
Main engines Diesels. Electric motors

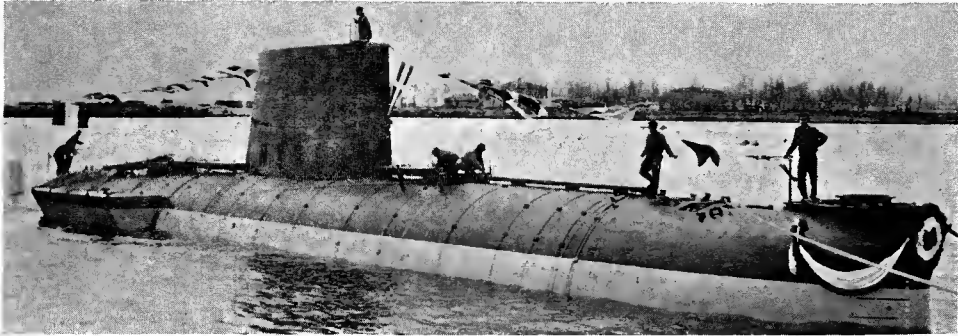
Oceangoing submarines planned under the New Construction Programme.

4 "Toti" Class (New Construction)

Displacement, tons 460 standard; 524 surface;
582 submerged
Length, feet (metres) 153 2 (46 7)
Beam, feet (metres) 15 4 (4 7)
Draught, feet (metres) 13 1 (4 0)
Torpedo tubes 4—21 in
Main engines 2 Fiat MB 820. N/I diesels, 1 electric motor, Diesel-electric drive; 2 200 hp; 1 shaft
Speed, knots 14 on surface; 15 submerged
Radius, miles 3 000 at 5 knots
Complement 18

Bagnolini, originally projected under the 1956-57 programme, was to have been named *Delfino*, and then *Guglielmo Marconi*. Toti was originally projected

Name	No.	Builders	Laid down	Launched
BAGNOLINI	S 505	CRDA Monfalcone	15 Apr 1965	
DANDOLO		CRDA Monfalcone		
MOCENIGO		CRDA Monfalcone		
TOTI	S 506	CRDA Monfalcone	15 Apr 1965	12 Mar 1967



TOTI

1967, Italian Navy, Official

under the 1958-59 Programme. They are Italy's first of these boats was recast several times, being finalised submarines since the Second World War. The design as coastal submarines of the hunter-killer type.

Name	No.	Builders
ALFREDO CAPPELLINI (ex-USS <i>Capitaine</i> , SS 336)	S 513	Electric Boat Div, General Dynamics Corp
EVANGELISTA TORRICELLI (ex-USS <i>Lizardfish</i> , SS 373)	S 512	Manitowoc SB Co, Manitowoc, Wisconsin
FRANCESCO MOROSINI (ex-USS <i>Besugo</i> , SS 321)	S 514	Electric Boat Div, General Dynamics Corp

3 Ex-U.S. "Balao" Class

Displacement, tons 1 600 standard; 1 816 surface;
2 425 submerged
Length, feet (metres) 311 5 (95 0)
Beam, feet (metres) 27 (8 2)
Draught, feet (metres) 17 (5 2)
Torpedo tubes 10—21 in (533 mm) 6 bow and 4 stern
Main engines 4 GM 16/278 diesels, 6 000 hp; 4 electric motors, 2 750 hp
Speed, knots 18 on surface; 10 submerged
Radius, miles 14 000 at 10 knots
Oil fuel (tons) 300
Complement 85

Former United States oceangoing submarines. *Lizardfish* was originally to have been renamed *Luigi Torelli*. The 3-inch gun is no longer mounted.



EVANGELISTA TORRICELLI

1966, Italian Navy, Official

Name	No.	Builders	Laid down	Launched	Completed	Transferred
LEONARDO DA VINCI (ex-USS <i>Dace</i> , SS 247)	S 510	Electric Boat Div, General Dynamics Corp	22 July 1942	25 Apr 1943	23 July 1943	15 Dec 1954
ENRICO TAZZOLI (ex-USS <i>Barb</i> , SS 220)	S 511	Electric Boat Div, General Dynamics Corp	7 June 1941	2 Apr 1942	8 July 1942	31 Jan 1955

2 Ex-U.S. "Gato" Class

Displacement, tons 1 525 standard; 1 B16 surface;
2 425 submerged
Length, feet (metres) 307 4 (93 7)
Beam, feet (metres) 27 3 (8 3)
Draught, feet (metres) 17 (5 2)
Torpedo tubes 10—21 in (533 mm) 6 bow and 4 stern
Main engines 4 GM diesels, 6 000 hp; 2 electric motors, 2 750 hp
Speed, knots 18 on surface; 10 submerged
Radius, miles 12 000 at 10 knots
Oil fuel (tons) 300 tons
Complement 85

Former United States oceangoing submarines. Transferred to Italy by the USA after conversion to guppy snorkel in 1953-54. Modified structure and fairwater. Loan by US was extended for 5 years in 1959. A photograph of *Enrico Tazzoli* appears in the 1963-64 to 1965-66 editions.



LEONARDO DA VINCI

1966, Italian Navy, Official

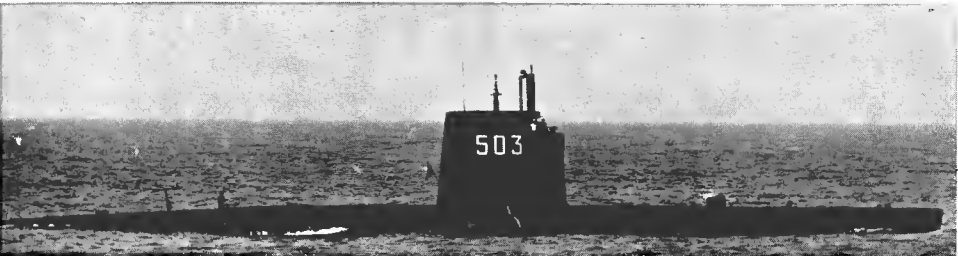
Name	No.	Builders	Laid down	Launched	Completed	Rebuilt
PIETRO CALVI (ex- <i>Bario</i> , ex- <i>Uit 7</i> , ex- <i>Bario</i>)	S 503	CRDA Trieste (1944); CN Taranto (1961)	15 Mar 1943	23 Jan 1944	Deo 1957	1961

1 "Flutto" Class

Displacement, tons 800 standard; 905 surface;
1 107 submerged
Length, feet (metres) 216 5 (66 0)
Beam, feet (metres) 23 (7 0)
Draught, feet (metres) 13 2 (4 0)
Torpedo tubes 4—21 in (533 mm)
Main engines 2 MAN diesels, 2 700 hp; 3 electric motors 1 shaft
Speed, knots 14 on surface 14 submerged
Radius, miles 10 000 at 8 knots
Complement 60

Sunk by Allied air-raid on 16 Mar 1945 after having been renamed *Uit 7*. She was reconstructed with a tear drop bow and modernised during 1957-59, being re-launched on 21 June 1959. In Mar 1961 her original name *Bario* was changed to *Pietro Calvi*.

DISPOSALS. The submarine *Vortice* of the "Flutto" class was officially deleted from the list in 1967. The submarine *Giada* of the "Acciaio" class was removed from the effective list in 1965.



PIETRO CALVI

1967, Aldo Fraccaroli

GUIDED MISSILE CRUISERS (CG)

1 Projected Improved Type
TRIESTE (ex-Italia)

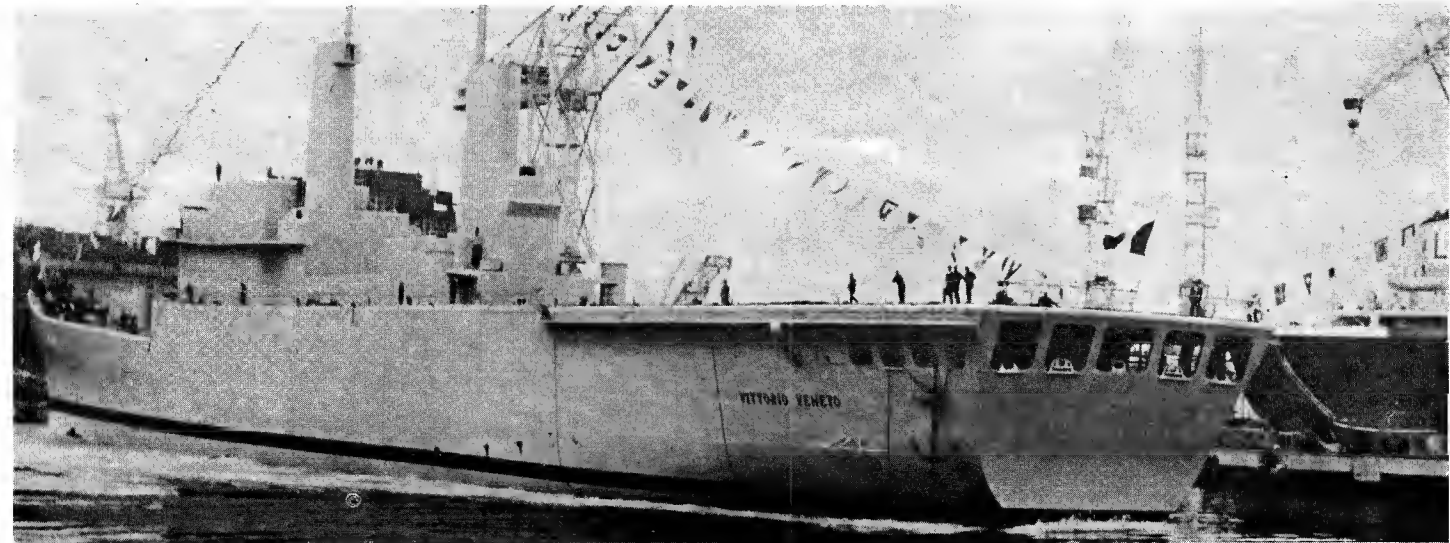
Planned under the new Construction Programme. Developed from the design of *Vittorio Veneto*. To be laid down in 1967.

1 New Construction

Displacement, tons 8 850 full load
Length, feet (metres) 557.7 (170.0) oa
Beam, feet (metres) 63.6 (19.4)
Draught, feet (metres) 17.2 (5.2)
Aircraft 9 A/B 240B ASW helicopters
Missiles, AA 1 "Terrier" twin launcher forward

Name	No.	Builders	Laid down	Launched
VITTORIO VENETO	C 550	Navalmecanica Castellammare di Stabia	10 June 1965	5 Feb 1967
Guns, AA	8—3 in (76 mm) 62 cal.			
Torpedo tubes	2 triple for A/S torpedoes			
Boilers	4 Foster-Wheeler; 711 psi (50 kg/cm ²); 842°F (450°C)			
Main engines	2 Tosi double reduction geared turbines; 73 000 shp; 2 shafts			
Speed, knots	32 designed			
Radius, miles	6 000 at 20 knots			
Oil fuel, tons	1 200			
Complement	550			

Multi-purpose guided missile armed cruiser and helicopter carrier. Developed from the "Doria" class, but with considerable strengthening of the helicopter squadron and improved facilities for anti-submarine operations. *Vittorio Veneto* was projected under the 1959-60 New Construction Programme, but her design has been recast several times. see official artist's impression in the 1963-64 to 1966-67 editions. The ship data in the adjacent table refers to *Vittorio Veneto* only. *Trieste* will be of different design.



VITTORIO VENETO

1967, Italian Navy, Official

GUIDED MISSILE ESCORT CRUISERS (CG)

Name	No.	Builders	Laid down	Launched	Completed
ANDREA DORIA	553	Cantieri del Tirreno, Riva Trigoso	11 May 1958	27 Feb 1963	23 Feb 1964
CAIO DUILIO	554	Navalmecanica Castellammare di Stabia	16 May 1958	22 Dec 1962	30 Nov 1964

2 "Andrea Doria" Class
(officially rated as *Incrociatori di Scorta*)

Displacement, tons 6 500 full load
Length, feet (metres) 489.8 (149.3) oa
Beam, feet (metres) 56.4 (17.2)
Draught, feet (metres) 16.4 (5.0)
Aircraft 4 A/B 204B ASW helicopters
Missiles, AA 1 "Terrier" twin launcher forward
Guns, AA B—3 in (76 mm) 62 cal.
Torpedo tubes 2 triple for 12 in (305 mm) A/S torpedoes
Boilers 4 Foster-Wheeler; 711 psi (50 kg/cm²); 842°F (450°C)
Main engines 2 double reduction geared turbines 60 000 shp; 2 shafts
Speed, knots 31 designed, 30 sustained
Radius, miles 6 000 at 20 knots
Oil fuel, tons 1 100
Complement 478 (53 officers, 425 men)



ANDREA DORIA

1967, courtesy Dr Giorgio Arra

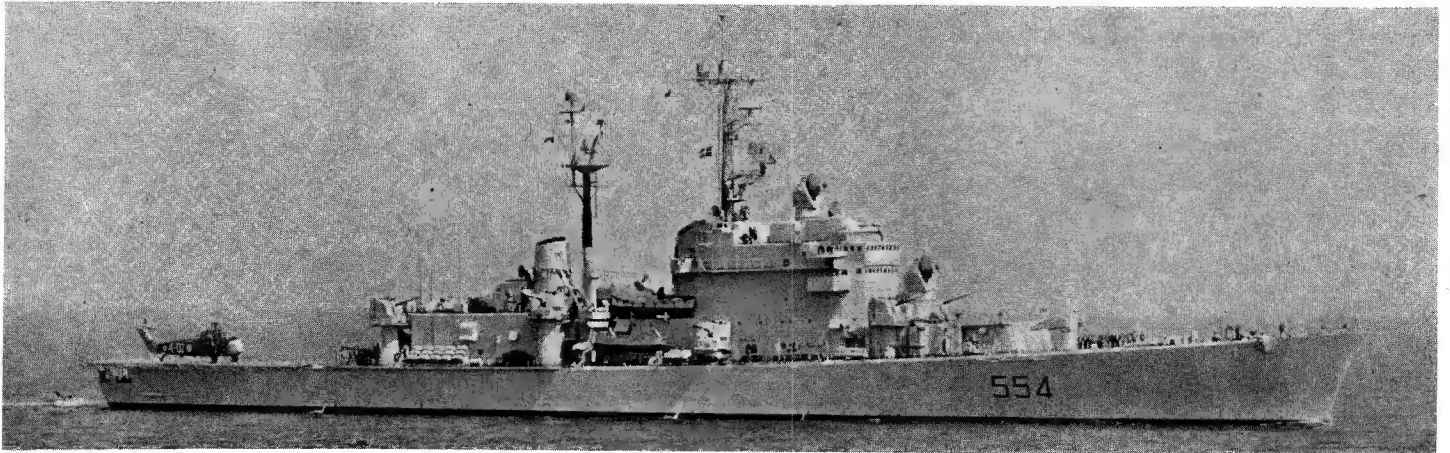
Escort cruisers of an entirely new design, extraordinarily beamy in relation to their length. *Enrica Dandolo* was the name originally allocated to *Andrea Doria*.

GUNNERY. The anti-aircraft battery includes eight 3-inch fully automatic guns of a new pattern, disposed in single turrets, four on each side amidships abreast the funnels and the bridge.

PHOTOGRAPHS. A large starboard broadside view and a port bow view of *Andrea Doria* appear in the 1964-65 edition, and a port quarter oblique overhead view showing flight deck appears in the 1965-66 edition.

HELICOPTER PLATFORM. Helicopters operate from a large platform aft measuring 98.5 feet by 52.5 feet (30 by 16 metres).

ROLL DAMPING. Both ships have Gyrofin-Salmoiraghi stabilisers.



CAIO DUILIO

1967, courtesy Dr Giorgio Arra

GUIDED MISSILE LIGHT CRUISER (CG)

Name	No	Builders	Laid down	Launched	Completed	Converted
GIUSEPPE GARIBALDI	C 551	C.R. dell'Adriatico, Trieste	Dec 1933	21 Apr 1936	Dec 1937	Dec 1957-1962

Displacement, tons	9 800 standard; 11 335 full load
Length, feet (metres)	593 (180.7) wl; 613.5 (187.0) oa
Beam, feet (metres)	61.7 (18.8) oa
Draught, feet (metres)	22 (6.7)
Missiles, surface	4 tubes for ICBM's aft in "Y" position. see <i>Guided Weapons</i> notes
Missiles, AA	1 "Terrier" twin launcher
Guns, dual purpose	4—5.3 in (135 mm), 45 cal., 2 twin, see <i>Gunnery</i> notes
Guns, AA	8—3 in (76 mm) 62 cal., singles
Armour	Belt 4.5 in (115 mm); deck 2.25 in (57.5 mm); turrets 4 in (100 mm); CT 5 in (125 mm)
Boilers	6 CRDA Yarrow three-drum type; 356 psi (25 kg/cm ²); 608°F (320°C)
Main engines	2 Parsons single reduction geared turbines; 100 000 shp; 2 shafts
Speed, knots	30
Radius, miles	4 000 at 20 knots
Oil fuel (tons)	1 700
Complement	694 (43 officers, 651 men)

Originally a sister ship of the light cruiser *Luigi di Savoia Duca degli Abruzzi* (removed from the effective list in Apr 1961), she was converted into a guided missile cruiser. The appearance of the ship was completely altered, with a single large trunked funnel and lattice masts. She was commissioned for operational service in Nov 1962, and became Flagship of the Commander-in-Chief.

GUIDED WEAPONS. The ballistic missile tubes are installed aft in "Y" position, the "Terrier" system being superimposed in "X" position, a deck higher. *Giuseppe Garibaldi* launched mock "Terriers" and ballistic missiles off La Spezia in late 1961 and 1962. Her initial launches were made in the Caribbean Sea on 8 Nov 1962 first with "Terriers" and then with ballistic missiles.

CONVERSION. The modernisation and conversion of *Giuseppe Garibaldi* into an Anti-Submarine Warfare Command Ship was under consideration, but was rescinded due to lack of funds.

GUNNERY. The armament includes four 5.3 inch dual purpose guns of a new automatic model disposed in two twin turrets forward, and an anti-aircraft battery of eight 3-inch automatic guns, also of a new pattern, built by O.T.O. La Spezia, disposed in single turrets, four on each side amidships abreast the funnel and bridge.

ENGINEERING. On her original trials this ship developed 104 030 shp and a speed of 33.6 knots. During reconstruction her machinery was completely refitted.

FUNNEL. Early in 1963 the top of the funnel cowl was modified, increasing the height.

OPERATIONAL. *Giuseppi Garibaldi*, with the guided missile armed destroyers *Impavido* and *Intrepido*, form the 4th Naval Division.

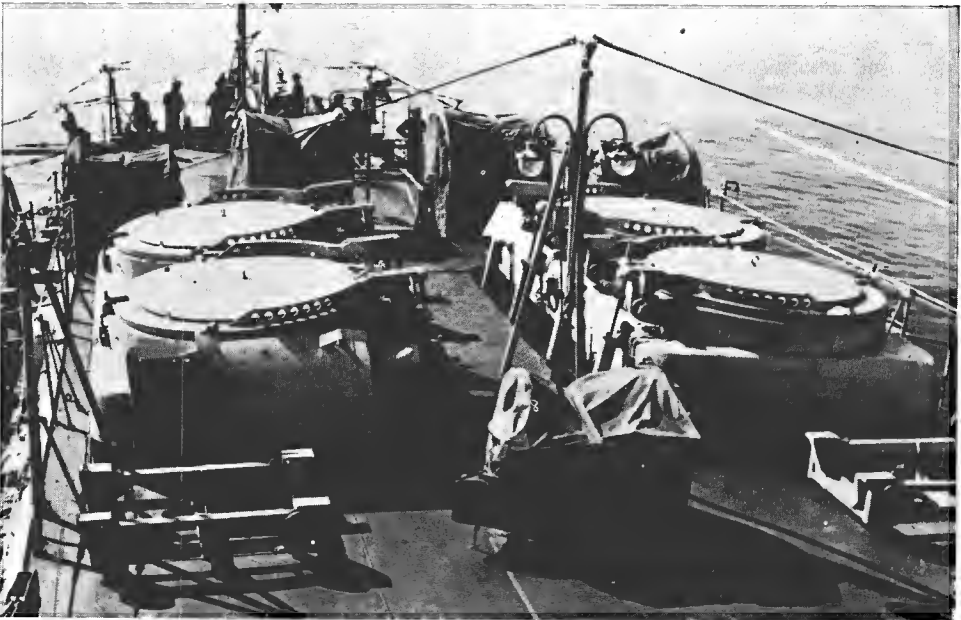
PHOTOGRAPHS. A starboard broadside view and a port quarter oblique view, both before the funnel was heightened, appear in the 1962-63 edition; and a port quarter view of the ship, firing a Polaris-type fleet ballistic missile from a vertical tube aft, appears in the Addenda (page 450) of the 1963-64 edition (official Italian Navy photograph). A starboard dead broadside surface view appears in the 1964-65 and 1965-66 editions, a port quarter oblique surface view in the 1965-66 edition, and a stern view of the ship, firing a "Terrier" missile, in the 1966-67 edition.

DRAWING. Starboard elevation and plan. Drawn in 1963. Scale 128 feet = 1 inch.



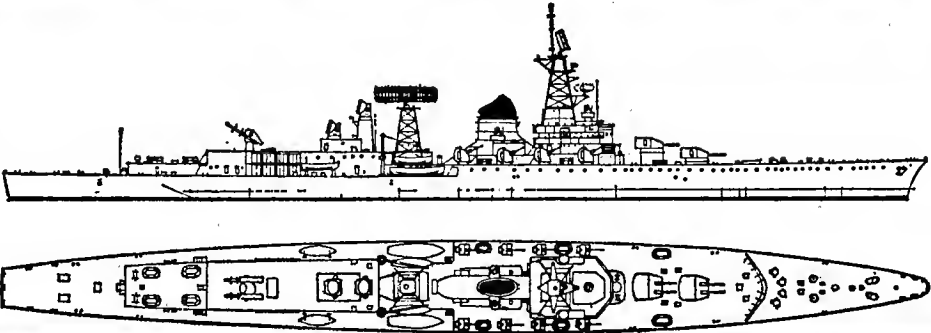
GIUSEPPE GARIBALDI

1967, Dr. Giorgio Arra



GIUSEPPE GARIBALDI (showing stern tubes for 4 ballistic missiles)

Aldo Fraccaroli



GIUSEPPE GARIBALDI

1966, Aldo Fraccaroli

GUIDED MISSILE ARMED DESTROYERS (DDG)

New Construction
2 "Audace" Class

ARDITO	AUDACE
Displacement, tons	4 400 full load
Length, feet (metres)	446.4 (136.6)
Beam, feet (metres)	46.7 (14.2)

Draught, feet (metres)	15 (4.6)
Aircraft	2 light A/S helicopters
Missiles, AA	1 "Tartar" launcher aft
Guns, dual purpose	2—5 in (127 mm) 3B cal
Guns, AA	4—3 in (76 mm) 62 cal
Torpedo tubes	6 A/S (two tripled)
Boilers	4
Main engines	2 geared turbines; 73 000 shp
Speed, knots	33

It was announced in Apr 1966 that two new guided missile armed destroyers would be built. They will be basically similar to, but an improvement in design on that of, the "Impavido" class, but will be measurably larger, with an extended flight platform so that they can operate more than one A/B 204 B ASW helicopters. Officially rated as *Caccia Lanciamissile* and designated DDG.

Name	No.	Builders	Ordered	Laid down	Launched	Completed
IMPAVIDO	D 570	Cantieri del Tirreno, Riva Trigoso	Jan 1957	10 June 1957	25 May 1962	16 Nov 1963
INTREPIDO	D 571	Ansaldo, Leghorn	1959	16 May 1959	21 Oct 1962	30 Oct 1964

2 "Impavido" Class

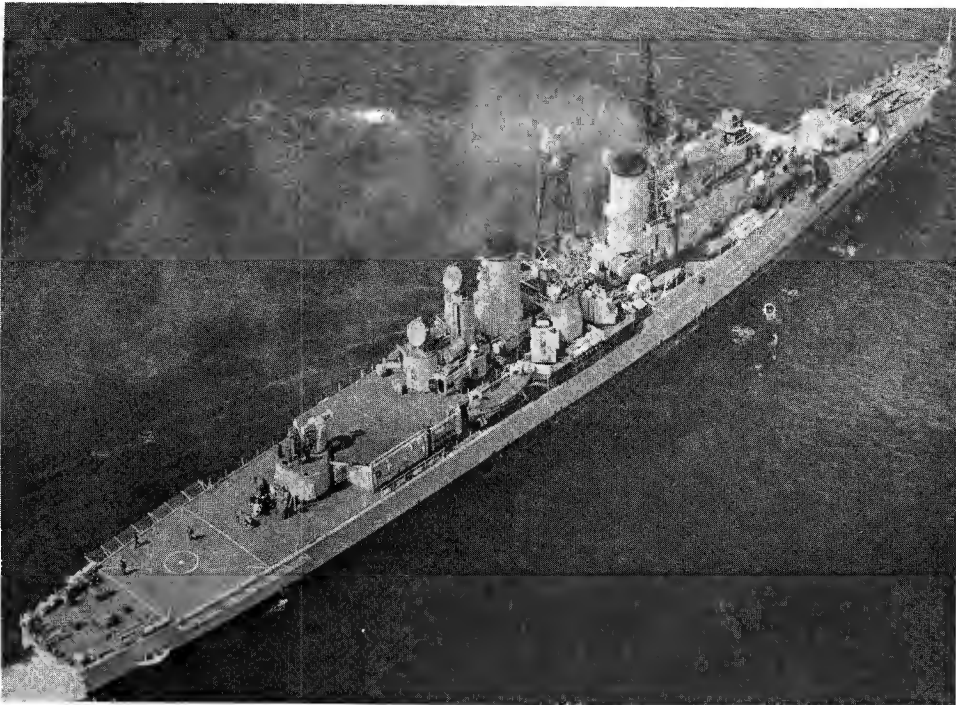
Displacement, tons	3 201 standard; 3 941 full load
Length, feet (metres)	429.5 (130.9)
Beam, feet (metres)	44.7 (13.6)
Draught, feet (metres)	14.8 (4.5)
Aircraft	1 A/S light helicopter
Missiles, AA	1 "Tartar" launcher, aft
Guns, AA	2—5 in (127 mm) 3B cal. forward
	4—3 in (76 mm) 62 cal.
Torpedo tubes	2 triple for A/S torpedoes
Boilers	4 Foster Wheeler; 711 psi (50 kg/cm ²); 842°F (450°C)
Main engines	2 double reduction geared turbines
	70 000 shp; 2 shafts
Speed, knots	34 designed, see <i>Engineering</i>
Radius, miles	3 300 at 20 knots
Oil fuel, tons	650
Complement	344 (15 officers, 319 men)

Rated as *Caccia Lanciamissili*. Built under the 1956-57 and 1958-59 programmes, respectively. Both ships have stabilisers.

ANTI-SUBMARINE WARFARE. The helicopters are of the weapons carrier type (Italian).

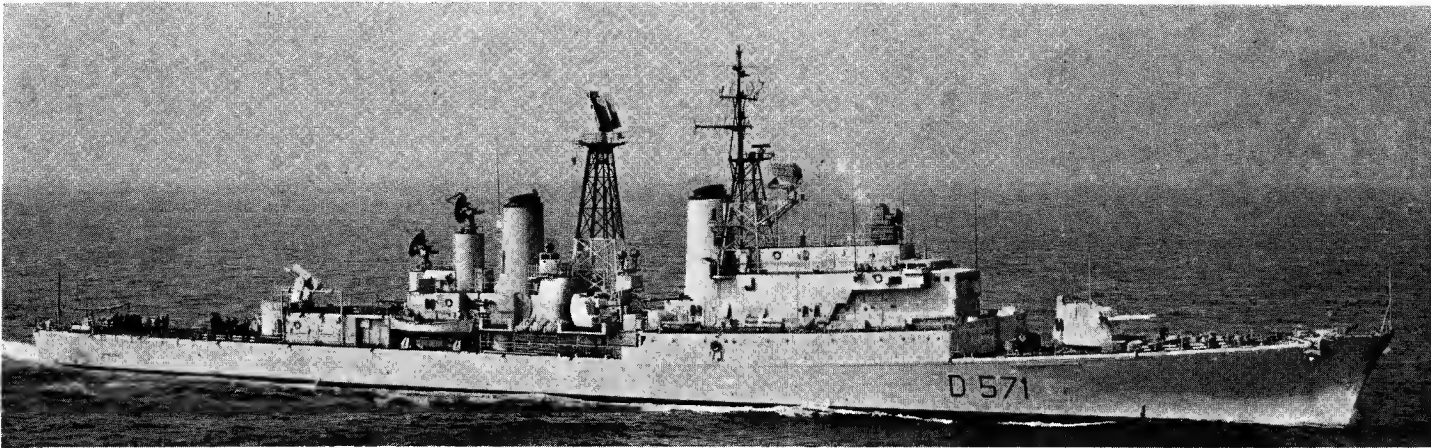
ENGINEERING. On preliminary full power trials *Impavido*, at light displacement, reached 34.5 knots (33 knots max at normal load). Sustained sea speed: 30 knots.

PHOTOGRAPHS. A large port quarter view of *Impavido* appears in the 1963-64 edition, a large starboard bow view of *Intrepido* in the 1964-65 edition, a large starboard broadside aerial view of *Impavido* on full power trials in the 1964-65 and 1965-66 editions, a port bow surface view of *Impavido* in the 1964-65 to 1966-67 editions, a port broadside aerial view of *Intrepido* in the 1965-66 and 1966-67 editions, and a port broadside surface view of *Impavido* in the 1966-67 edition.



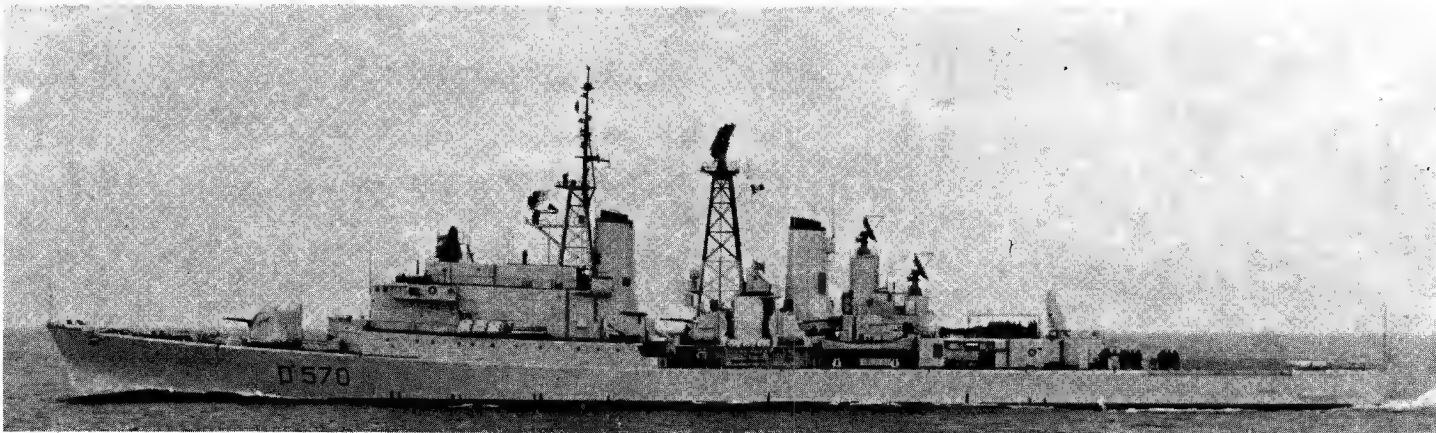
IMPAVIDO

1967, Dr. Giorgio Arra



INTREPIDO

1967, Italian Navy, Officia



IMPAVIDO

1967, Aldo Fraccaroli

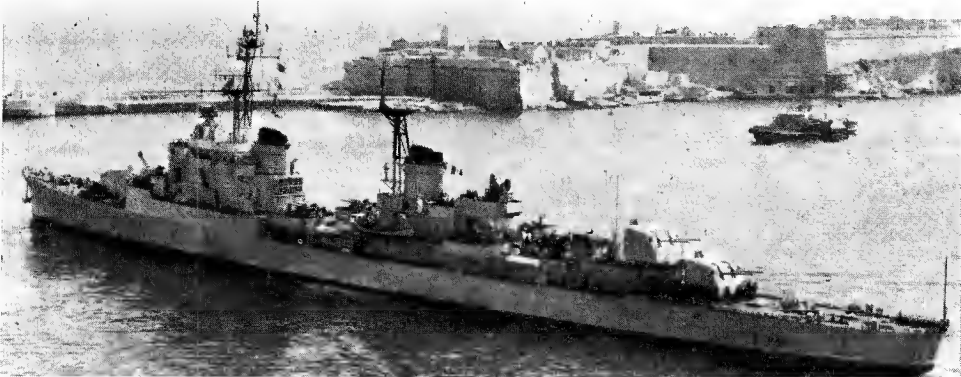
DESTROYER LEADERS (ex-Light Cruisers) DL

Name	No.	Builders	Laid down	Launched	Completed
SAN GIORGIO (ex-Pompeo Magno)	D 562	Cantieri N. Riuniti Ancona	23 Sep 1939	28 Aug 1941	24 June 1943
SAN MARCO (ex-Giulio Germanico)	D 563	Navalmecanica Castellammare de Stabia	11 May 1940	20 July 1941	19 Jan 1956

Displacement, tons	San Marco: 5 257 full load San Giorgio: 4 450 full load
Length, feet (metres)	455 2 (138 8) wl, 466 5 (142 3) oa
Beam, feet (metres)	47 2 (14 4)
Draught, feet (metres)	21 (6 4)
Guns, surface	San Marco: 6—5 in (127 mm) 38 San Giorgio: 4—5 in (127 mm) 38
Guns, AA	San Marco: 20—40 mm, 56 cal. San Giorgio: 3—3 in (76 mm) 62
A/S	Sao Marco: 1 three-barrel mortar; 4 DCT; 1 DC rack San Giorgio: 1 three-barrel mortar; 2 triple torpedo tubes
Boilers	San Marco only: 4 three-drum type, 412 psi (29 km/cm²), 608°F (320°C)
Main engines	San Marco: 2 single reduction geared steam turbines, 110 000 shp; 2 shafts San Giorgio: 2 Tosi Metrovick gas turbines, 15 000 hp; and 4 Fiat diesels; 16 600 bhp; 2 shafts
Speed, knots	San Marco: 38 5; San Giorgio: 20 (diesels only), 28 (diesel and gas)
Radius, miles	San Marco: 3 080 at 20 knots; San Giorgio: 4 800 at 20 knots
Oil fuel (tons)	San Marco: 1 380; San Giorgio: 500 (diesel oil)
Complement	San Giorgio: 348 (23 officers, 325 men) San Marco: 494 (30 officers, 464 men)

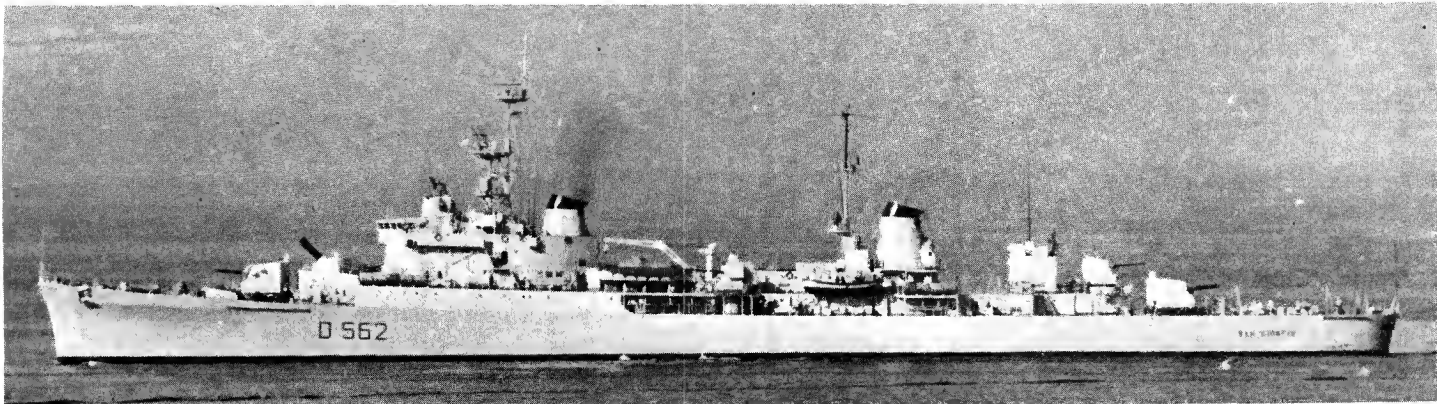
before completion, but re-floated in 1947. Both converted into fleet destroyers in 1951-56 by Cantieri del Tirreno, Genova and Navalmecanica Castellammare di Stabia, San Giorgio being completed 1 July 1955 and San Marco 20 Feb 1956. Re-rated Esploratori (scouts) in 1957, and Cacciatorpediniere Conduttori (destroyer leaders) in 1958.

CONVERSION. San Giorgio underwent complete reconstruction at the Naval Dockyard, La Spezia, in 1963-65. The modernisation included her adaptation as a Training Ship for 130 cadets of the Accademia Navale. Changes were made in the armament (she was formerly armed like San Marco) and new machinery fitted, gas turbines and diesels replacing steam turbines and boilers.



SAN MARCO 1964, A. & J. Pavia

Built as Esploratori Oceanici (Ocean Scouts), but re-rated light cruisers of the Roman Captains (Capitani Romani) class. Giulio Germanico sunk by Germans in Sep 1943



SAN GIORGIO 1967, Aldo Fraccaroli

DESTROYERS

Name	No.	Builders	Ordered	Laid down	Launched	Completed
IMPETUOSO	D 558	Cantieri del Tirreno, Riva Trigoso	Nov 1950	7 May 1952	16 Sep 1956	25 Jan 1958
INDOMITO	D 559	Ansaldo, Leghorn (formerly OTO)	Nov 1950	24 Apr 1952	7 Aug 1955	23 Feb 1958

2 "Impetuoso" Class

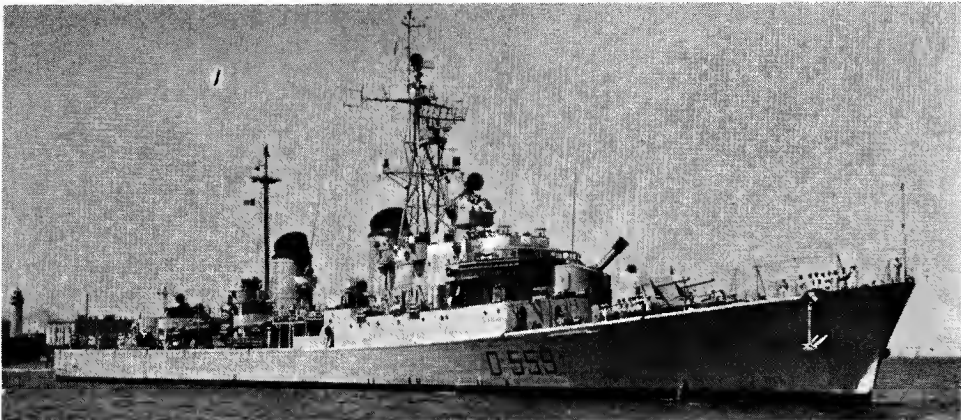
Displacement, tons	2 755 standard; 3 800 full load
Length, feet (metres)	405 (123 4) pp; 418 7 (127 6) oa
Beam, feet (metres)	43 5 (13 3)
Draught, feet (metres)	17 5 (5 3)
Guns, AA	4—5 in (127 mm) 38 cal. 16—40 mm, 56 cal.
A/S	1 three-barrel mortar; 4 DCT; 1 DC rack
Torpedo tubes	2 triple for A/S torpedoes
Boilers	4 Foster-Wheeler; 711 psi (50 kg/cm²) working pressure; 842°F (450°C) superheat temperature
Main engines	2 double reduction geared turbines 65 000 shp; 2 shafts
Speed, knots	34, see Engineering notes
Radius, miles	3 400 at 20 knots
Oil fuel (tons)	650
Complement	393 (25 officers, 368 men)

Italy's first destroyers constructed since the Second World War. Officially rated as Cacciatorpediniere or torpedo boat destroyers.

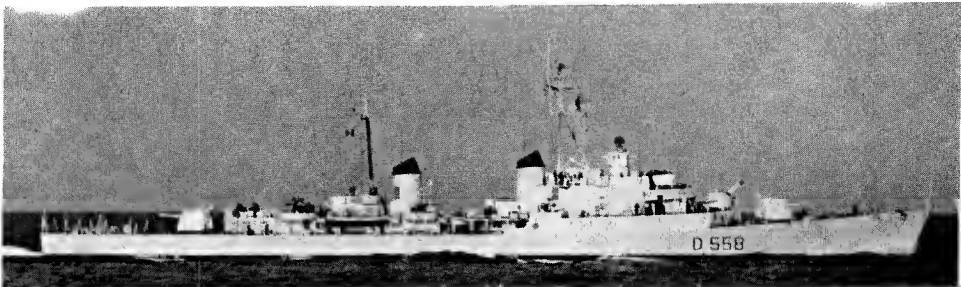
ENGINEERING. On their initial sea trials these ships attained a speed of 35 knots at full load.

CONVERSION. The modernisation and conversion of these ships to guided missile armed destroyers, with single "Tartar" launcher aft in place of the 5 inch gun mounting, is under consideration, but the decision has been postponed pending provision of funds.

PHOTOGRAPHS. Other views of Impetuoso appear in the 1958-59 to 1962-63 editions, a starboard dead broadside surface view (silhouette photograph) of Indomito in the 1963-64 to 1965-66 editions, a port broadside surface view of Impetuoso in the 1964-65 to 1966-67 editions. A starboard bow view of San Giorgio appears in the 1966-67 edition.



INDOMITO 1966, Dr. Giorgio Arra



IMPETUOSO Added 1967, Aldo Fraccaroli

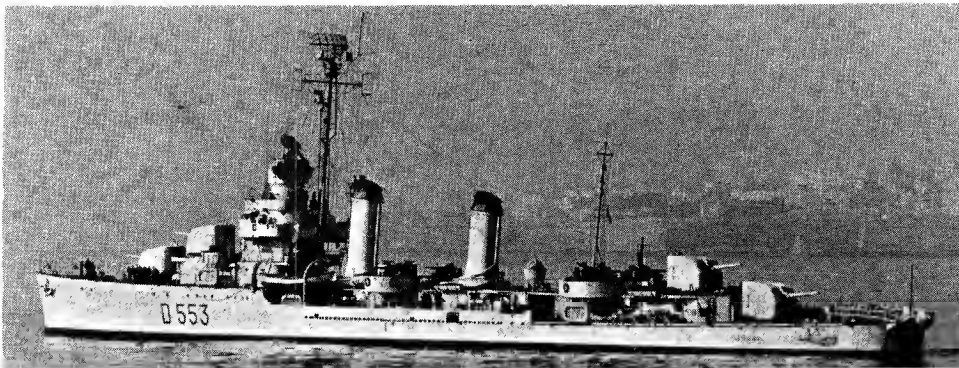
Destroyers—continued

Name	No.	Builders	Laid down	Launched	Completed
ARTIGLIERE (ex-USS Woodworth, DD 460)	D 553	Bethlehem, San Francisco	13 Jan 1941	29 Nov 1941	30 Apr 1942

Displacement, tons	2 575 full load
Length, feet (metres)	347.3 (105.9) oa
Beam, feet (metres)	36.1 (11.0)
Draught, feet (metres)	18 (5.5) max
Guns, surface	4—5 in (127 mm) 38 cal.
Guns, AA	12—40 mm, 56 cal.
	6—20 mm, 70 cal.
A/S	4 DC throwers; 2 DC racks
Boilers	4 high pressure
Main engines	Geared turbines
	50 000 shp; 2 shafts
Speed, knots	31
Radius, miles	6 000 at 12 knots
Oil fuel (tons)	600
Complement	250

Former United States "Mayo" class destroyer (DD).
Used as command ship of motor torpedo boat flotillas.

TRANSFER. Both transferred from USA and commissioned on 25 May 1951. Officially turned over to Italy on 11 June 1951. The 5—21 inch torpedo tubes were removed.



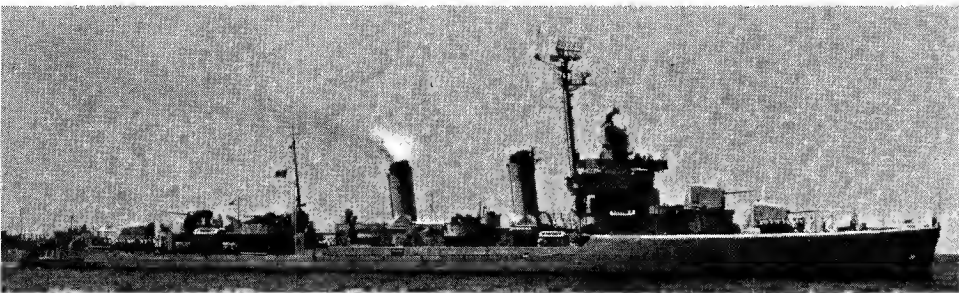
ARTIGLIERE Added 1966, Aldo Fraccaroli

APPEARANCE. *Artigliere* has flat funnels and shielded "X" 5 inch mounting, but *Aviere* has round funnels and no shield to "X" 5 inch gun mounting, and has extra tier on bridge, see photographs above and below.

Name	No.	Builders	Laid down	Launched	Complete
AVIERE (ex-USS Nicholson, DD 442)	D 554	Boston Navy Yard	1 Nov 1939	31 May 1940	3 June 1941

Displacement, tons	2 580 full load
Length, feet (metres)	341 (103.9) wl; 348.2 (106.1) oa
Beam, feet (metres)	36.1 (11.0)
Draught, feet (metres)	18 (5.5) max
Guns, surface	4—5 in (127 mm) 3B cal.
Guns, AA	12—40 mm; 6—20 mm
A/S	4—DC throwers; 2 DC racks
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	50 000 shp; 2 shafts
Speed, knots	31
Radius, miles	6 000 at 12 knots
Oil fuel (tons)	600
Complement	250

Former United States "Gleaves" class destroyer (DD).
See TRANSFER and APPEARANCE above.



AVIERE 1966, Giorgio Arra

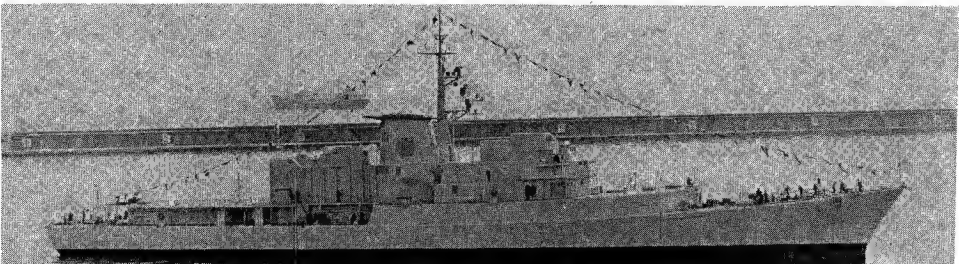
FRIGATES (Frigate)

2 "Alpino" Class (New Construction)

Displacement, tons	2 700 full load
Length, feet (metres)	349.0 (106.4) pp; 352.0 (107.3) wl; 371.7 (113.3) oa
Beam, feet (metres)	43 (13.1)
Draught, feet (metres)	12.7 (3.9)
Aircraft	2 A/B 204B ASW helicopters
Guns dual purpose	6—3 in (76 mm) 62 cal single
A/S	1 single-barrelled DC mortar
Tubes	2 triple 12 in (305 mm) for A/S torpedoes
Main engines	4 Tosi diesels = 16 800 hp; 2 Tosi Metrovick gas turbines = 15 000 hp; 31 800 hp; 2 shafts
Speed, knots	22 (diesel only), 28 (diesel and gas)
Radius, miles	4 200 at 18 knots
Oil fuel (tons)	275
Complement	254 (21 officers, 233 men)

The original "Circe" class project was modified in 1962, in respect of both machinery and armament. The new design is an improved version of that of the "Centauro"

Name	No.	Builders	Laid down
ALPINO (ex-Circe)	F 580	Cantiere Navali del Tirreno, Riva Trigoso	27 Feb 1963
CARABINIERE (ex-Climene)	F 581	Cantiere Navali del Tirreno, Riva Trigoso	9 Jan 1965



ALPINO 1967, courtesy Giorgio Ghigliore

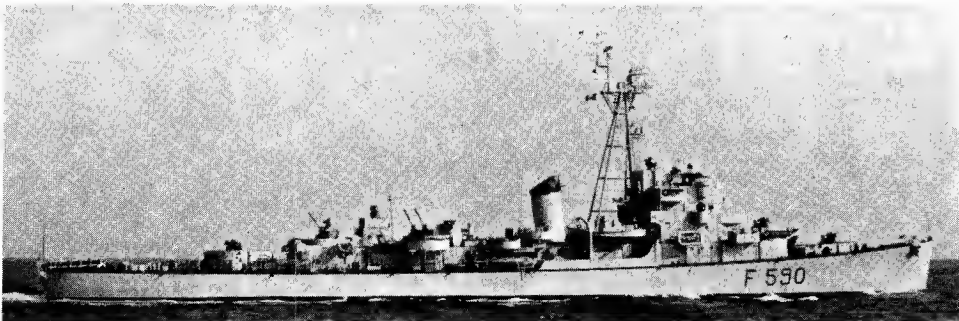
class combined with that of the "Bergamini" class. They will have similar basic characteristics but a heavier displacement and increased engine power. *Circe* and *Climene* were provided for under the 1959-60 programme. Two other ships of the same type, to have been named *Perseo* and *Polluce* were provided for under the 1960-61 programme, but they were suspended owing to fiscal considerations. The originally allocated names *Circe* and *Climene* were changed to *Alpino* and *Carabiniere*, respectively, in June 1965.

Name	No.	Builders	Laid down	Launched	Completed
ALDEBARAN (ex-USS Thornhill, DE 195)	F 590	Federal SB & DD Co, P. Newark	7 Oct 1943	30 Dec 1943	1 Feb 1944
ALTAIR (ex-USS Gandy, DE 764)	F 591	Tampa SB Co	1 Mar 1943	12 Dec 1943	7 Feb 1944
ANDROMEDA (ex-USS Wesson, DE 184)	F 592	Federal SB & DD Co, P. Newark	29 July 1943	17 Oct 1943	11 Nov 1943

3 Ex-U.S. DE Type. "Altair" Class

Displacement, tons	1 900 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	14 (4.3)
Guns, surface	3—3 in (76 mm) 50 cal.
Guns, AA	6—40 mm; 1B—20 mm
A/S	1 Hedgehog; 8 DCT; 2 DC racks
Main engines	6 000 hp GM diesel-electric, 2 shafts
Speed, knots	21; 17.5 sea speed
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	160

Ex-US destroyer escorts of the "Bostwick" class ceded by USA under MDAP. Transferred on 10 Jan 1951. In 1956 a pentapod foremast was stepped in place of the former polemast. A photograph of *Altair* appears in the 1956-56 to 1962-63 editions.



ALDEBARAN 1967, Italian Navy, Official

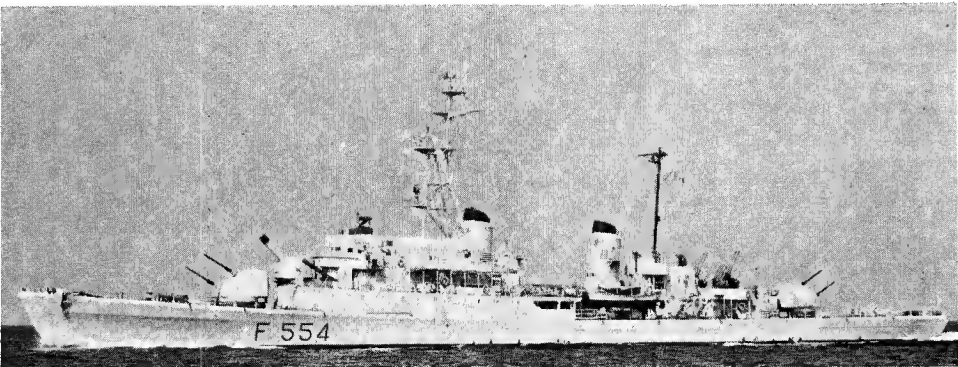
Frigates—continued

4 "Centauro" Class

Displacement, tons	1 807 standard; 2 196 full load (revised official figures)
Length, feet (metres)	308.4 (94) pp; 338.4 (103.1) oa
Beam, feet (metres)	39.5 (12)
Draught, feet (metres)	12.6 (3.8)
Guns, AA	3—3 in (76 mm) 62 cal single.
A/S	1 three-barrelled depth charge mortar 6 torpedo launchers (2 triple)
Main engines	2 double reduction geared turbines 2 shafts; 22 000 shp
Speed, knots	26
Boilers	2 Foster Wheeler; 626 psi (44 kg/cm ²) working pressure; 842°F (450°C) superheat temperature
Oil fuel, tons	400
Radius, miles	2 500 at 20 knots
Complement	255 (16 officers, 239 men)

The above refers to *Castore*, see *Conversion*.

Name	No.	Builders	Laid down	Launched	Completed
CANOPO	F 552 (ex-D 570)	Cantieri Navali di Taranto	15 May 1952	20 Feb 1955	1 Apr 1958
CENTAURO	F 554 (ex-D 571)	Ansaldo, Leghorn	31 May 1952	4 Apr 1954	5 May 1957
CIGNO	F 555 (ex-D 572)	Cantieri Navali di Taranto	10 Feb 1954	20 Mar 1955	7 Mar 1957
CASTORE	F 553 (ex-D 573)	Cantieri Navali di Taranto	14 Mar 1955	8 July 1956	14 July 1957



CENTAURO

1967, Italian Navy, Official

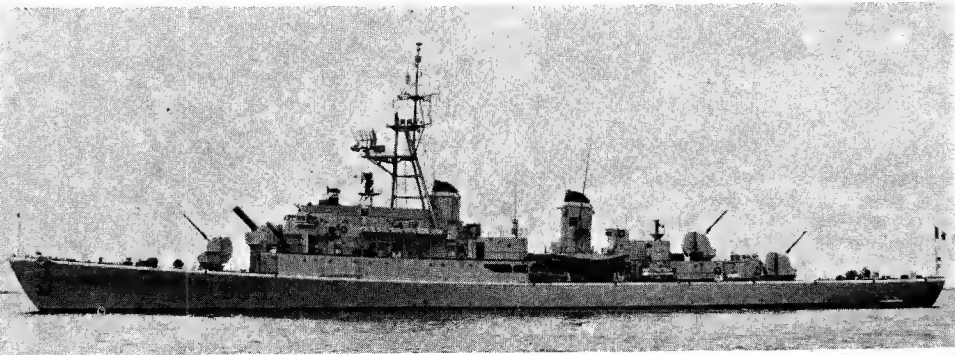
Cigno (US hull No. DE 1020) and *Castore* (DE 1031) were built to Italian plans and specifications under the US off-shore programme. All four ships have automatic anti-submarine and medium anti-aircraft armament, and are fitted with US sonar gear.

PENNANT NOS. In 1960 these four ships, which originally had D pennant numbers, were given F Nos. The originally allocated F number of *Canopo* was 551.

CONVERSION. *Castore* underwent medium anti-aircraft conversion in 1966-67 and the other three ships are being similarly converted. See former particulars in the 1966-67 and earlier editions. The changes include the mounting of three 3-inch 62 cal single guns, replacing the two 2 barrelled 76/62 and the four 40 mm 70 cal AA.

GUNNERY. The 3 inch guns originally mounted were in twin gunhouses of a new type with the two barrels in the vertical plane, one superfiring over the other. They were Italian designed and built by OTO, La Spezia. Their rate of fire was 60 rounds per minute with 3 200 feet per second muzzle velocity.

PHOTOGRAPHS Several differing views of *Cigno* appear in the 1957-58 to 1965-66 editions.



CASTORE

1967, Italian Navy, Official

4 "Bergamini" Class

Displacement, tons	1 650 full load
Length, feet (metres)	308.4 (94) oa
Beam, feet (metres)	37.4 (11.4)
Draught, feet (metres)	10.2 (3.1)
Guns, AA	3—3 in (76 mm) 62 cal single
A/S	1 single-barrelled depth charge mortar, 6—12 in torpedo launchers (2 triple)
Aircraft	1 A/B-47-J3 helicopter
Main engines	4 diesels (Fiat in <i>Fasan</i> and <i>Margottini</i> , Tosi in others); 2 shafts; 15 000 bhp
Speed, knots	26 max; 24.5 sustained
Radius, miles	4 000 at 10 knots

Light frigates of new type with diesel instead of steam propulsion. Originally rated as *Corvette Veloci*.

CONSTRUCTION. *Carlo Bergamini* was originally to have been built by Cantieri Navali di Taranto; but the order was cancelled and she was begun at CRDA di Trieste Yard in May 1959 (built until launch in San Marco yard, Trieste, but completed in Monfalcone yard, both of CRDA).

ANTI-SUBMARINE WARFARE. The single-barrelled automatic depth charge mortars have a range of 1 000 yards. Rate of fire 15 DC per minute. The 12-inch torpedoes have a life of 13 minutes at 30 knots.

DESIGN. The plans underwent many amendments. (See photo of first model in 1957-58 edition, drawing of second projection in 1958-59 edition, and revised drawing of third scheme in 1959-60 and 1960-61 editions).

ENGINEERING. The diesels are coupled to the shafts by reduction gearing and Vulcan joints.

ROLL DAMPING. Two Denny-Brown stabilisers reduce inclination in heavy seas from 20 to 5 degrees.

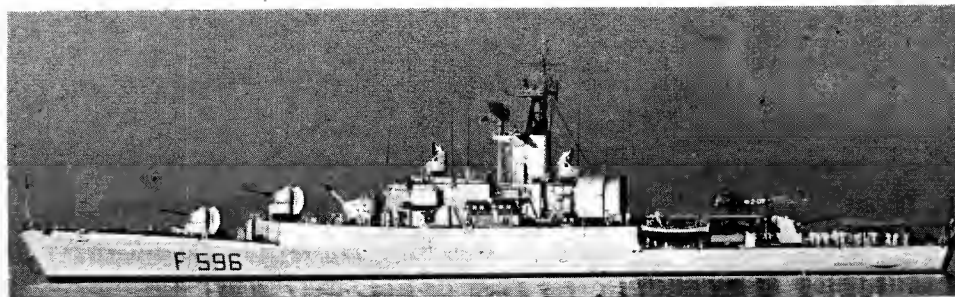
PHOTOGRAPHS. A starboard broadside view of *Carlo Margottini* appears in the 1963-64 to 1965-66 editions.

Name	No.	Builders	Laid down	Launched	Completed
CARLO BERGAMINI	F 593	San Marco, CRDA Trieste	19 May 1957	16 June 1960	23 June 1962
CARLO MARGOTTINI	F 595	Navalmeccanica, Castellammare	26 May 1957	12 June 1960	5 May 1962
LUIGI RIZZO	F 596	Navalmeccanica, Castellammare	26 May 1957	6 Mar 1960	15 Dec 1961
VIRGINIO FASAN	F 594	Navalmeccanica, Castellammare	6 Mar 1960	9 Oct 1960	10 Oct 1962



CARLO BERGAMINI

1966, Giorgio Arra



LUIGI RIZZO

1966, Aldo Fraccaroli

CORVETTES

Name	No.
LICIO VISINTINI	F 546
PIETRO DE CRISTOFARO	F 540
SALVATORE TODARO	F 550
UMBERTO GROSSO	F 541
NAZARIO SAURO	

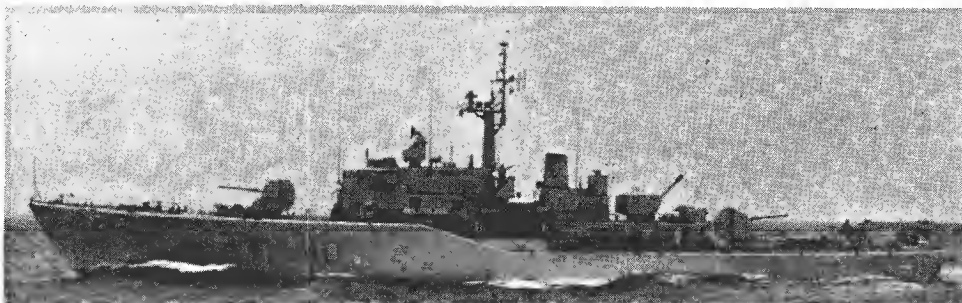
Builders	Laid down	Launched	Completed
CRDA Monfalcone	30 Sep 1963	30 May 1965	25 Aug 1966
Cantiere Navali de Tirreho, Riva Tregoso	30 Apr 1963	29 May 1965	19 Dec 1965
Cantiere Ansaldo, Leghorn	21 Oct 1964	24 Oct 1964	25 Apr 1966
Cantiere Ansaldo, Leghorn	21 Oct. 1962	12 Dec. 1964	25 Apr. 1966

4 + 1 "De Cristofaro" Class

Displacement, tons	850 standard; 940 full load
Length, feet (metres)	246 (75.0) pp; 263.2 (80.2) oa
Beam, feet (metres)	33.7 (10.3)
Draught, feet (metres)	9 (2.7)
Guns, dual purpose	2-3 in (76 mm), 62 cal, single A/S
Torpedo tubes	1 single-barrel DC mortar
Main engines	2 triple for A/S torpedoes
Speed, knots	2 diesels = 8 400 bhp; 2 shafts
Radius, miles	23.5 max; 21.5 sustained sea
Oil fuel, tons	4 000 at 18 knots
Complement	100
	131 (8 officers, 123 men)

The design is an improved version of that of the "Albatros" class. A fifth unit of this class, *Nazario Sauro*, was begun in 1967.

PHOTOGRAPHS. A starboard bow oblique view of *Pietro de Cristofaro* appears in the 1965-66 edition.



PIETRO DE CRISTOFARO

1966, Italian Navy, Official

Name	No.
AIRONE (ex-PCE 1921)	F 545
ALBATROS (ex-PCE 1919)	F 543
ALCIONE (ex-PCE 1920)	F 544
AQUILA (ex-Lynx, ex-PCE 1626)	F 542

Builders	Launched	Completed
Navalmecanica, Castellammare di Stabia	21 Nov 1954	29 Dec 1955
Navalmecanica, Castellammare di Stabia	18 July 1954	1 June 1955
Navalmecanica, Castellammare di Stabia	19 Sep 1954	23 Oct 1955
Breda Marghera Yard, Mestre, Venice	31 July 1954	2 Oct 1956

4 "Albatros" Class

Displacement, tons	800 standard; 950 full load
Length, feet (metres)	250.3 (76.3) oa
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	9.2 (2.8)
Guns, AA	4-40 mm 70 cal. Bofors (see Gunnery)
A/S	2 Hedgehogs Mk II; 2 DCT; 1 DC rack (see Tubes)
Main engines	2 Fiat diesels = 5 200 bhp; 2 shafts
Speed, knots	19
Radius, miles	2 400 at 18 knots
Oil fuel (tons)	100
Complement	109

Airone, *Albatros* and *Alcione* were built in Italy. Four identical ships were built in Italian yards to the offshore construction order of the USA for MDP account and handed over to Denmark.

GUNNERY. The two 3-inch guns originally mounted, one forward and one aft, were temporarily replaced by two 40 mm guns in 1963. The ultimate armament will include two 3-inch guns of the OTO Malera model.



AQUILA

1967, Aldo Fraccaroli

TUBES. All four ships will receive two triple ASW torpedo tubes.

TRANSFER. *Aquila*, built in Italy (laid down on 25 July 1953), but initially given to the Netherlands, was ceded to the Italian Navy on 18 Oct 1961 at Den Helder.

PHOTOGRAPHS. A photograph of *Airone* appears in the 1959-60 to 1961-62 editions.

17 "Ape" Class

BAIONETTA	F 578	GABBIANO	F 571
BOMBARDA	F 549	GRU	F 566
CHIMERA	F 569	IBIS	F 561
CORMORANO	F 575	MINERVA	F 562
CRISALIDE	F 547	PELLICANO	F 574
DANAIDE	F 563	SCIMITARRA	F 564
FARFALLA	F 548	SFINGE	F 579
FLORA	F 572	SIBILLA	F 565
		URANIA	F 570

Displacement, tons	670 standard; 771 full load
Length, feet (metres)	192.8 (58.8) wl; 212.6 (64.8) oa
Beam, feet (metres)	28.5 (8.7)
Draught, feet (metres)	8.9 (2.7)
Guns, AA	4-40 mm 56 cal in 7 ships; 3-40 mm 56 cal in 9 ships; 2-40 mm 56 cal in 2 ships, see Gunnery
A/S	1 Hedgehog Mk 15 or Mk 10 (see notes); 4 DCT; 1 DC rack
Torpedo tubes	2-17.7 in (450 mm), see notes
Main engines	2 Fiat diesels = 3 500 bhp; 2 shafts
Speed, knots	15
Radius, miles	2 800 at 15 knots
Oil fuel (tons)	64
Complement	100

All launched in 1942-48. Originally fitted for mine-sweeping. Armament is frequently changed. All modified with navigating bridge. Only eight vessels attached to Command Training School carry torpedo tubes.

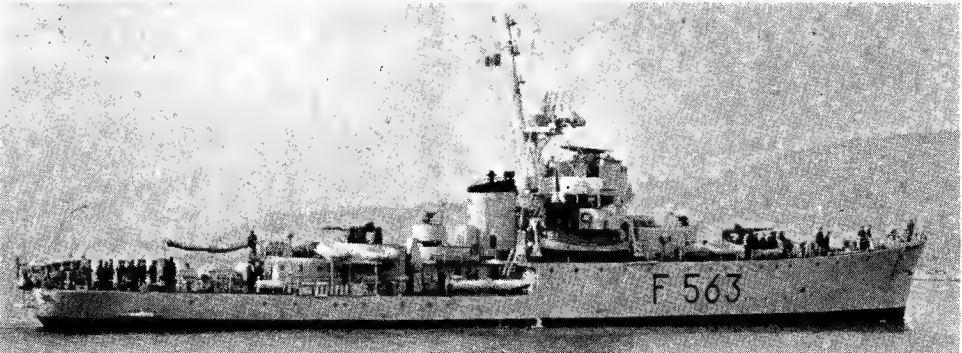
GUNNERY. *Chimera*, *Cormorano*, *Danaide*, *Flora*, *Pellicano*, *Sibilla*, and *Sfinge* carry 4-40 mm 56 cal AA. *Bombarda* and *Gabbiano* carry 2-40 mm 56 cal AA and 2-20 mm 70 cal AA. Remainder have 3-40 mm 56 cal AA. *Cormorano* and *Danaide* no hedgehog).

PHOTOGRAPHS of *Gru* in the 1955-56 and 1956-57 editions, of *Sfinge* in the 1956-57 and 1957-58 editions, of *Scimitarra* in the 1957-58 edition, of *Pellicano* in the 1960-61, 1961-62 and 1962-63 editions, of *Cormorano* in the 1963-64, 1964-65 and 1965-66 editions.



CRISALIDE

1966, Italian Navy, Official



DANAIDE (fitted as leader, with deckhouse. No hedgehog)

1966, Giorgio Arra

DISPOSALS OF "APE" CLASS
Ape, F 567, *Fenice*, F 577, *Folaga*, F 576, and *Pomona*, F 573, were officially deleted from the list in 1965, and *Driade* on 1 Aug 1966.

OCEAN MINESWEEPERS

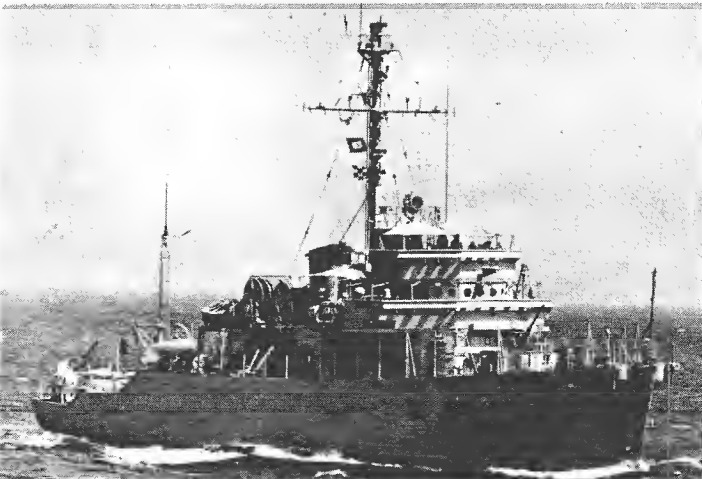
4 "Salmone" Class (Ex-U.S. MSO Type)

SALMONE (ex-MSO 507) M 5430 **SQUALO** (ex-MSO 518) M 5433
SGOMBRO (ex-MSO 517) M 5432 **STORIONE** (ex-MSO 506) M 5431

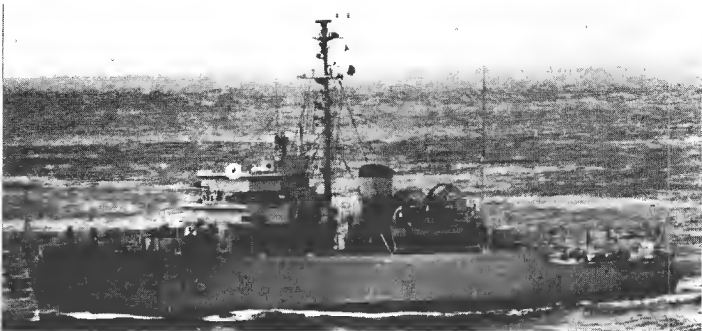
Displacement, tons 665 standard; 750 full load
Dimensions, feet 165 wl; 173 oa × 35 × 10
Guns 1—40 mm; 56 cal AA
Main Engines 2 diesels; 2 shafts; 1 600 bhp = 14 knots
Oil fuel (tons) 46
Range, miles 3 000 at 10 knots

Former US "Agile" class. Wooden hulls and non-magnetic equipment, diesels of non-magnetic stainless steel alloy. Controllable pitch propellers. *Storione*, launched on 13 Nov 1954, was built by Martinolich SB Company, San Diego, and transferred on 23 Feb, 1956. *Salmone*, launched on 19 Feb 1955 was built by Martinolich SB Co, and transferred at San Diego, Calif, on 17 June 1956 under MDAP. *Sgombro* and *Squalo* were delivered in June 1957.

A much larger photograph of *Storione* appears in the 1957-58 to 1959-60 editions, and a starboard bow view in the 1960-61 to 1965-66 editions.



SGOMBRO 1966, Aldo Fraccaroli



SQUALO 1963, Captain Aldo Fraccaroli

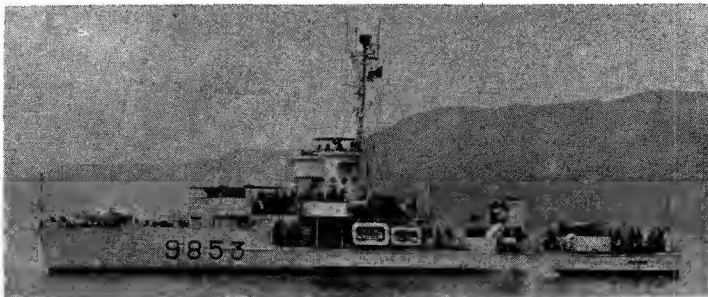
SUPPORT GUNBOATS (Cannoniere d'appoggio)

6 "Alano" Class (Ex-U.S. Landing Ships, Support/Large)

ALANO (ex-LSSL 34) **MASTINO** (ex-LSSL 62) **SEGUGIO** (ex-LSSL 64)
BRACCO (ex-LSSL 38) **MOLOSSO** (ex-LSSL 63) **SPINONE** (ex-LSSL 118)

Displacement, tons 246 standard; 430 full load
Dimensions, feet 153 wl; 158.5 oa × 23.7 × 5.7
Guns 5—40 mm; 56 cal; 4—20 mm, 70 cal; 4—12.7 mm
Main Engines 8 Gray Marine diesels; 2 shafts; 1 800 bhp = 12 knots
Oil fuel (tons) 87
Radius, miles 8 000 at 10 knots

Transferred from the USA on 25 July 1951, under the Mutual Defense Assistance Program. NATO pennant numbers L 9851 to L 9856, respectively. A photograph of *Alano* appears in the 1955-56 to 1957-58 editions, and of *Segugio* in the 1957-58 to 1962-63 editions.



MASTINO 1963, Giorgio Arra

PATROL VESSELS

1 PC Type Rated as Coastal Escort Vessel (Corvetta)

VEDETTA (ex-Belay Deress, ex-USS PC 1616) F 597

Displacement, tons 325 standard; 450 full load
Dimensions, feet 170 pp; 174 oa × 23 × 10
Guns 2—40 mm; 56 cal Bofors AA; 2—20 mm AA
Main Engines 4 diesels; 2 shafts; 3 240 bhp = 19 knots
A/S 1 Hedgehog; 4 DCT; 2 DC racks
Range, miles 3 000 at 12 knots
Complement 60

Built at Brest, France, as a United States off-shore order under the Mutual Defense Assistance Program. Laid down on 17 Dec 1953. Launched on 30 Sep 1954. Completed on 23 Aug 1955. Originally intended for Germany, but a change in US plans resulted in the ship never being delivered, and she was finally given to Ethiopia under the Military Aid Programme. Transferred to Ethiopia at Bremerhaven, Germany, by the US Navy in Jan 1957. Officially taken over from the US flag at Massawa, Ethiopia, in mid-1957. Later, the ship was found to be too sophisticated for Ethiopia, and she was returned to the US Navy. She was then sold to Italy, being transferred on 3 Feb 1959, and officially classified as a *nave pattuglia* (patrol vessel). Air-conditioning equipment is installed. Refitted in La Spezia Navy Yard in 1959. Employed as a Fishery Protection Vessel.



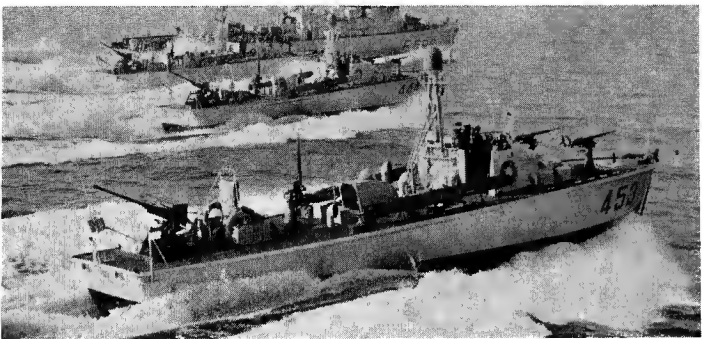
VEDETTA 1967, Italian Navy, Official

MOTOR TORPEDO BOATS (Motosiluranti)

MS 441 (ex-841) **MS 443** (ex-843) **MS 444** (ex-844) **MS 453** (ex-853)

Displacement, tons 64 full load
Dimensions, feet 78 × 20 × 6
Guns 1—40 mm, 56 cal; 2 or 3—20 mm, 70 cal
Torpedoes 2—17.7 in (no tubes)
Main engines 3 petrol motors; 3 shafts; 4 500 bhp = 34 knots
Radius, miles 1 000 at 20 knots

Former US PT boats of Higgins type. Refitted in Italy in 1949-53. New radar installed. MS 441 converted into a fast transport for commandos and frogmen. Before reconstruction had 3 Packard 12 cyl petrol motors of 4 050 bhp. MS 442 (ex-842), MS 451 (ex-851) and MS 452 (ex-852) transferred to Customs in 1966, and MS 444 (ex-844) was removed from the effective list in 1966.

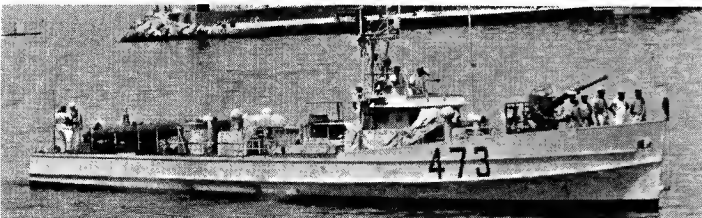


MS 453 en flotille 1967, Italian Navy, Official

MS 472 (ex-612) **MS 473** (ex-813) **MS 474** (ex-614) **MS 481** (ex-615)

Displacement, tons 72 full load
Dimensions, feet 92 × 15 × 5
Guns 1 or 2—40 mm, 56 cal
Tubes 2—17.7 in
Main Engines Petrol motors; 3 shafts; 3 450 bhp = 27 knots
Radius, miles 600 at 16 knots

Built in 1942-43 at CRDA Monfalcone yard; converted as MV (motovedette) with no tubes under the Peace Treaty. Reconverted in 1951-53. MS 472 and MS 473 were refitted as convertible boats in 1960 and MS 474 and MS 481 in 1961. The armament of these interchangeable boats is subject to frequent alterations. MS 482 (ex-616), MS 483 (ex-617) and MS 484 (ex-618) were removed from the effective list in 1963, and MS 471 (ex-611) and MS 475 (ex-619) in 1965.



MS 473 1966, Giorgio Arra

COASTAL MINESWEEPERS

18 "Abete" Class

ABETE	M 5501	FAGGIO	M 5507	OLMO	M 5512
ACACIA	M 5502	FRASSINO	M 5508	ONTANO	M 5513
BETULLA	M 5503	GELSO	M 5509	PINO	M 5514
CASTAGNO	M 5504	LARICE	M 5510	PIOPPO	M 5516
CEDRO	M 5505	MANDORLO	M 5519	PLATANO	M 5516
CILIEGIO	M 5506	NOCE	M 5511	QUERCIA	M 5517

Displacement, tons	378 standard; 405 full load
Dimensions, feet	138 pp; 144 oa x 26 5 x 8 5
Guns	2—20 mm, 70 cal AA
Main Engines	2 diesels; 2 shafts; 1 200 bhp = 13 5 knots
Oil fuel (tons)	25
Radius, miles	2 500 at 10 knots

Wooden hulled Dragomine Costieri constructed throughout of materials with the lowest possible magnetic attraction to attain the greatest safety factor when sweeping for magnetic mines. All transferred by the US in 1953-54. Original hull numbers AMS 72-76, 79-82, 88-90, 133-137. *Mandorlo* (ex-*Salice*, ex-USS *MSC 280*), transferred at Seattle on 16 Dec 1960, is of slightly different type and is used as MHC (minehunter). A photograph of *Cilegio* appears in the 1956-57 to 1961-62 editions, and of *Frassino* in the 1965-66 edition. A port bow view of *Mandorlo* appears in the 1962-63 to 1965-66 editions.



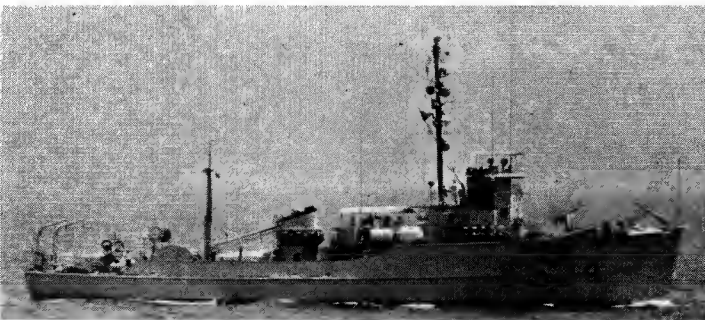
MANDORLO 1966, Italian Navy, Official

19 "Agave" Class

AGAVE	M 5531	GLICINE	M 5537	BAMBÙ	*M 5521
ALLORO	M 5532	LOTO	M 5538	EBANO	*M 5522
EDERA	M 5533	MIRTO	M 5539	MANGO	*M 5523
GAGGIA	M 5534	TIMO	M 5540	MOGANO	*M 5524
GELSOMINO	M 5535	TRIFOGLIO	M 5541	PALMA	*M 5526
GIAGGIOLO	M 5536	VISCHIO	M 5542	ROVERE	*M 5526
				SANDALO	*M 5527

Displacement, tons	375 standard; 405 full load
Dimensions, feet	144 oa x 26 5 x 8 5
Guns	2—20 mm; 70 cal AA
Main Engines	2 diesels; 2 shafts; 1 200 bhp = 13 5 knots
Oil fuel (tons)	25
Radius, miles	2 500 at 10 knots

Non-magnetic minesweepers of composite wooden and alloy construction similar to those transferred from the US but built in Italian yards. *Last 7 were built by CRDA, Monfalcone, and launched in 1956. A photograph of *Alloro* appears in the 1959-60 to 1961-62 editions, and of *Sandalo* in the 1962-63 to 1965-66 editions.



GAGGIA 1966, Aldo Fraccaroli



PALMA Added 1966, Aldo Fraccaroli

MOTOR GUNBOATS (Motocannoniere)

4 "Freccia" Class. Convertible Type

DARDO (ex-MC 592, ex-493)	P 495	SAETTA (ex-MC 591)	P 494
FRECCIA (ex-MC 590)	P 493	STRALE (ex-MC 593, ex-494)	P 496

Displacement, tons	188 standard; 215 full load
Dimensions, feet	150 x 23 8 x 5 5
Guns	As Gunboat: 3—40 mm, 70 cal or 2—40 mm, 70 cal As Fast Minelayer: 1—40 mm AA with 8 mines As Torpedo Boat: 1—40 mm, 70 cal As Torpedo Boat: 4—21 in
Tubes	
Main engines	2 diesels; 7 600 bhp; 1 Bristol Siddeley Proteus gas turbine. 4 250 shp; Total hp 11 850 = 40 knots

Freccia was laid down by Cantiere del Tirreno, Riva Trigosa on 30 Apr 1963, launched on 9 Jan 1965 and commissioned on 6 July 1965. *Saetta* was laid down by CRDA, Monfalcone on 11 June 1963, launched on 11 Apr 1965, and completed in 1966. *Dardo* was laid down by Taranto Navy Yard on 10 May 1964. Special convertible version designed to carry mines or depth charges. Can be converted in 24 hours to gunboat, torpedo boat, or fast minelayer, or missile boat. One boat will be armed with 5 short range missiles (range 10 000 metres). A photograph of *Freccia* appears in the 1965-66 and 1966-67 editions.



SAETTA 1967, Italian Navy Official

2 "Lampo" Class. Convertible Type

BALENO (ex-MC 492)	P 492	LAMPO (ex-MC 491)	P 491
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Displacement, tons	170 standard; 206 full load
Dimensions, feet	131 5 x 21 x 5
Guns	As Gunboat: 3—40 mm, 70 cal or 2—40 mm, 70 cal As Torpedo Boat: 1—40 mm, 70 cal As Torpedo Boat: 4—17 7 in
Tubes	
Main engines	2 Fiat diesels, 1 Metrovick gas turbine; 3 shafts; total 11 700 hp = 39 knots

A new type of convertible gunboats, improved version of the *Folgore* prototype. Both built by Arsenale MM Taranto. *Lampo* was laid down on 4 Jan 1958, launched on 22 Nov 1960 and commissioned in July 1963. *Baleno* was laid down on the same slip on 22 Nov 1960, launched on 10 May 1964 and commissioned on 16 July 1965. She is being converted to an improved design.



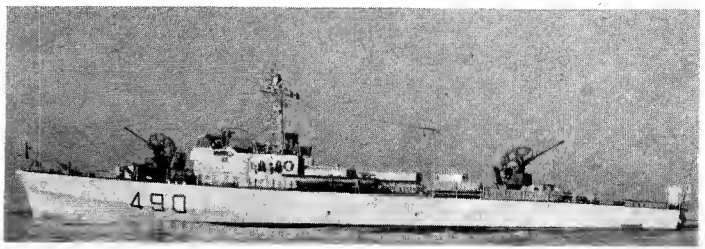
LAMPO 1965, Captain Aldo Fraccaroli

FOLGORE (ex-MC 490) P 490

Displacement, tons	160 standard; 190 full load
Dimensions, feet	129 5 x 19 7 x 5
Guns	2—40 mm AA
Tubes	4—17 7 in
Main Engines	4 diesels; 4 shafts; 10 000 bhp = 38 knots (accelerating from 20 knots to full speed very rapidly)

Authorised in Nov 1950, launched on 21 Jan 1954 from CRDA Monfalcone Yard, and commissioned on 21 July 1955. Two rudders. A port quarter oblique aerial view of *Folgore* appears in the 1963-64 to 1966-67 editions.

The old motor gunboat MC 485 (ex-*MS 621*, ex-*Toros*), former German S-boat, was officially deleted from the list in 1965.



FOLGORE 1967, Italian Navy, Official

Motor Gunboats —continued**1. Submarine Chaser****FULMINE** (ex-*Sentinella* ex-VAS 470) P499 (ex-F 598)

Displacement, tons 300 standard; 340 full load
 Dimensions, feet 154 pp; 163 oa × 21.7 × 7
 Guns 1—3 in, 62 cal forward; 2—40 mm, 56 cal AA
 Torpedoes 2—17.7 in
 Main engines 4 diesels; 2 shafts; 9 000 bhp = 30 knots
 Oil fuel (tons) 28
 Complement 60

Ordered in 1952 and laid down on 21 June 1954 at CRDA Monfalcone Yard. Launched on 14 Nov 1955. Commissioned on 20 Sep 1956 as a submarine chaser and rated specifically as a corvette under the generic category of coastal escort vessels. Assigned to motor torpedo boat flotillas as leader. Re-rated as a gunboat, re-named and re-numbered at the end of 1965. Formerly armed with Hedgehog, depth charge throwers and D.C. rack. 3 inch gun mounted in 1967.



FULMINE

1967, Italian Navy, Official

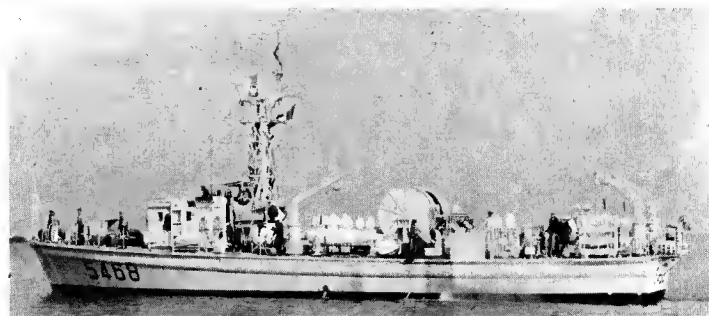
INSHORE MINESWEEPERS
20 NATO "Ham" Type
(Dragamine Litoranei) MSI
"Aragosta" Class

ARAGOSTA	M 5450	GAMBERO	M 5457	POLIPO	M 5463
ARSELLA	M 5451	GRANCHIO	M 5458	PORPORA	M 5464
ASTICE	M 5452	MITILO	M 5459	RICCIO	M 5465
ATTINIA	M 5453	OSTRICA	M 5460	SCAMPO	M 5466
CALAMARO	M 5454	PAGURO	M 5461	SEPIA	M 5467
CONCHIGLIA	M 5455	PINNA	M 5462	TELLINA	M 5468
DROMIA	M 5456			TOTANO	M 5469

Displacement, tons 119 standard; 130 full load
 Dimensions, feet 106 × 21 × 6
 Main Engines 2 diesels; 1 000 bhp = 14 knots
 Oil fuel (tons) 15
 Radius, miles 2 000 at 9 knots
 Complement 14

Similar to the British "Ham" class. NATO order. All constructed in Italian yards in 1955-57. All names of small sea inhabitants. Designed armament of one 20 mm gun not mounted. *Polipo* was originally named *Polpo*.

A photograph of *Ricco* appears in the 1958-59 to 1961-62 editions, of *Aragosta* in the 1962-63 and 1963-64 editions, of *Arsella* in the 1964-65 to 1966-67 editions.



TELLINA

1967, Dr. Giorgio Arra

DISPOSALS OF 8YMS TYPE. Of the 17 coastal minesweepers of the 8YMS type, *Begonia* and *Dalia* were transferred to the Custom House Guard Sea Service in Apr 1966, and the other nine vessels of the "Azalea" class (one funnel), *Azalea*, *Fiordaliso*, *Gardinia*, *Gladiolo*, *Magnolia*, *Orchidea*, *Primula*, *Tulipano*, *Verbena*, were removed from the effective list at the end of 1966 with the six units of the "Anemone" class (two funnels); *Anemone*, *Biancospino*, *Geranio*, *Mughetto*, *Picris* and *Oleandro*, see full particulars in the 1966-67 and earlier editions.

FAST REPLENISHMENT SHIP**1 Projected Nuclear Powered Type****AOR**

Displacement, tons circa 10 000
 Dimensions, feet circa 500
 Main Engines circa 20 knots

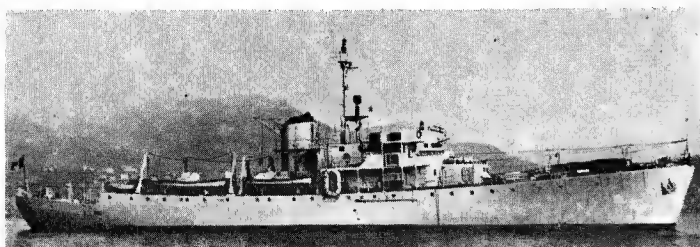
It is reported that a new type of fast replenishment ship is projected, but the exact specifications have not yet been finally decided and the above particulars formulated on operational requirements are very approximate, being based on a tentative design. A Fiat-Ansaldo project. The actual start of construction of the ship depends on the supply of enriched uranium from the USA.

SURVEY SHIPS (Navi Idrografiche)**1 Ex-British "Flower" Type****STAFFETTA** (ex-*Elbano*, ex-USS *Prudent*, PG 96, ex-HMS *Privet*) A 5307

Displacement, tons 1 020 standard; 1 280 full load
 Dimensions, feet 205 oa × 33 × 14.5
 Guns 2—20 mm AA
 Main Engines Triple expansion; 2 750 ihp = 15 knots
 Boiler 2 cylindrical
 Oil fuel (tons) 250
 Radius, miles 5 500 at 8 knots

Former British "Flower" class corvette (later re-rated frigate). Built by Morton Engine & DD Co, Montreal, Canada, engined by Port Arthur SB Co. Laid down on 14 Aug 1942. Launched on 4 Dec 1942. Completed on 16 Aug 1943. Converted for hydrographic duties and commissioned in 1953.

The oceanographic vessel *Bannock* (ex-USS *Bannock*, ATF 81), former US fleet ocean tug was converted and is manned by the National Research Council and is not on the Navy List; she wears the mercantile flag. (See data in the 1964-65 edition, page 151).



STAFFETTA

1967, Italian Navy, Official

DISPOSALS

The survey ship *Daino* (ex-B 2, ex-M 802), former German coal-burning minesweeper, was removed from the effective list in 1966.

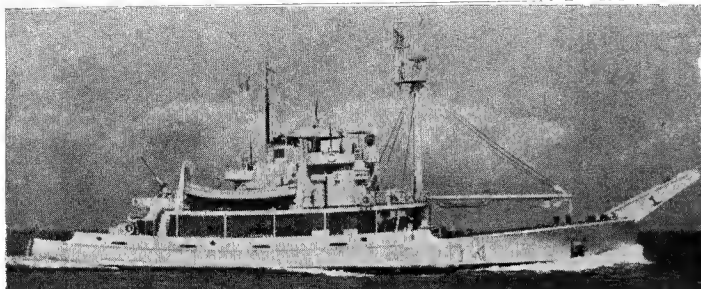
Of two sister ships, *Antilope* (ex-B 1, ex-M 328) was removed from the effective list in 1958, and *Gazzella* (ex-B 3, ex-M 801), which became a training ship in 1960, was removed from the effective list in 1966.

The survey ship *Azio* was discarded in 1957. Of the survey boats, *DV 133* and *DV 135* were scrapped in Aug 1953. *DV 401*, *DV 405*, *DV 406*, *DV 407* and *DV 415* in 1957-58. *DV 402*, *DV 403*, *DV 404*, *DV 411*, *DV 412*, *DV 413* and *DV 414* in 1959-60 and *DV 408* and *DV 409* in 1965.

NETLAYERS (Posareti)**2 "Alicudi" Class****ALICUDI** A 5304**FILICUDI** A 5305

Displacement, tons 680 standard; 834 full load
 Dimensions, feet 151.8 pp; 165.3 oa × 33.5 × 10.5
 Guns 1—40 mm, 70 cal AA; 4—20 mm, 70 cal AA
 Main Engines Diesel-electric; 1 200 hp = 12 knots

Built to the order of NATO. Laid down on 22 Apr 1954 and 19 July 1954, respectively by Ansaldo, Leghorn, launched on 11 July 1954 and 26 Sep 1954.



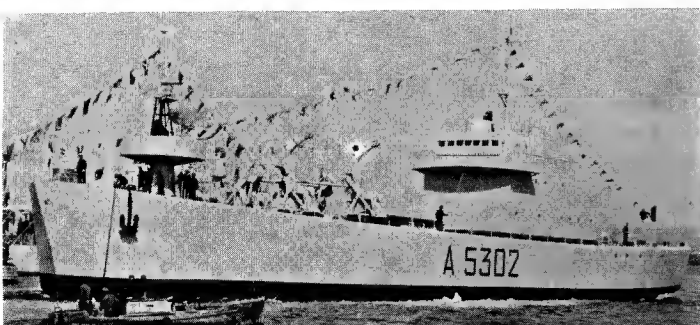
ALICUDI

1960, Italian Navy, Official

LANDING SHIPS**4 New Construction****CAPRERA** **LOMBARDO** **MARSALA** **PIEMONTE** **QUARTO**

Displacement, tons 764 standard; 930 to 980 full load
 Dimensions, feet 226.4 × 31.3 × 6
 Guns 4—40 mm AA (2 twin)
 Main engines 3 diesels, 2 300 bhp = 13 knots
 Radius, miles 1 300 at 13 knots

A new type of landing ships. *Quarto* was laid down on 19 Mar 1966 at Taranto Naval Shipyard and launched on 18 Mar 1967. The design is intermediate between that of an LSM and an LCT.



QUARTO

1967, Italian Navy, Official

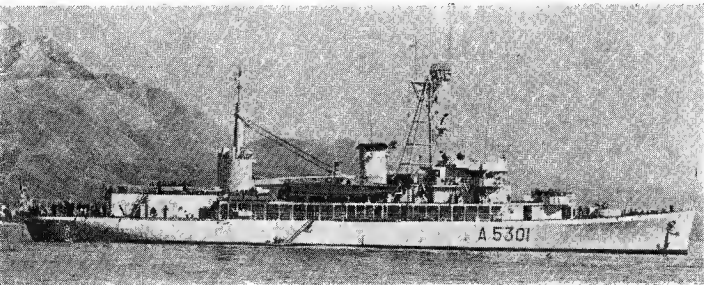
SUPPORT SHIP (Nave appoggio)

1 Ex-U.S. AVP Type

PIETRO CAVEZZALE (ex-USS Oyster Bay, AVP 28, ex-AGP 6) A 5301

Displacement, tons	1 766 standard; 2 800 full load
Dimensions, feet	300 wl; 311.8 oa x 41 x 13.5 max
Guns	2—40 mm, 56 cal AA
Main Engines	2 sets diesels; 2 shafts; 6 080 bhp = 16 knots
Oil fuel (tons)	400
Radius, miles	10 000 at 11 knots
Complement	200

Former United States seaplane tender (previously motor torpedo boat tender) of the "Barnegat" class, built at Lake Washington Shipyard and launched on 7 Sep 1942. Transferred to the Italian Navy on 23 Oct 1957 and renamed.



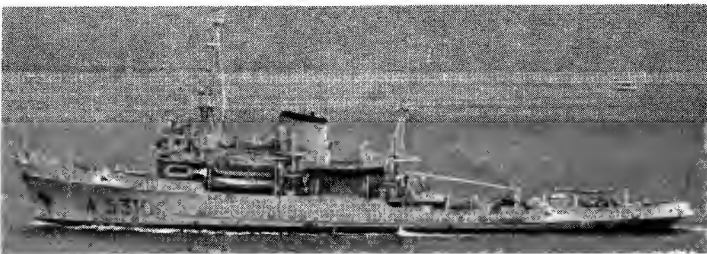
PIETRO CAVEZZALE 1964, Captain Aldo Fraccaroli

RESCUE AND SALVAGE SHIP (Nave Salvataggio)

PROTEO (ex-Perseo, ex-Proteo) A 5310

Displacement, tons	1 865 standard; 2 147 full load
Dimensions, feet	220.5 pp; 248 oa x 38 x 21 max
Main Engines	2 diesels; 4 800 bhp = 16 knots (see Notes)
Radius, miles	7 500 at 13 knots

Laid down at Cantieri Navali Riuniti, Ancona, in 1943. Suspended in 1944. Seized by Germans and transferred to Trieste. Construction recommenced at Cantieri Navali Riuniti, Ancona, in 1949. Diesels at 250 rpm drive a single propeller through hydraulic couplings and reduction gearing. Formerly mounted one 3.9 inch AA gun and two 20 mm, 70 cal AA guns.



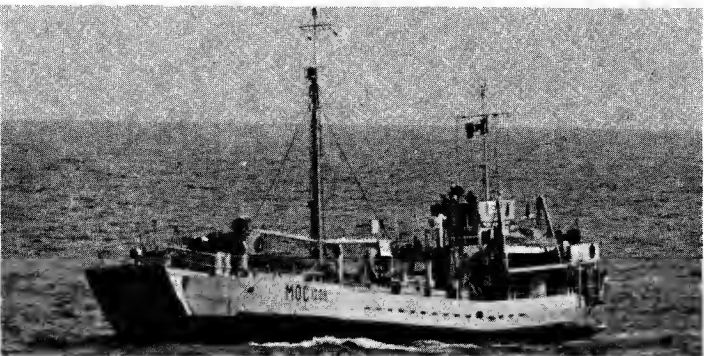
PROTEO Added 1966, Aldo Fraccaroli

REPAIR CRAFT (Motoofficine Costiere)

7 Ex-British LCT (3) Type

MOC 1201 MOC 1202	MOC 1203 MOC 1204	MOC 1205 MOC 1207	MOC 1208
Displacement, tons	350 standard; 640 full load		
Dimensions, feet	192 x 31 x 7		
Guns	2—40 mm; 2—20 mm (2 ships have 2—40 mm and 1 ship has 3—20 mm)		
Main Engines	Diesel = 8 knots		

Former British LCT (3) type landing craft converted to repair craft. MOC 1207 and 1208 are ammunition transports. NATO Nos.: A 5331 to 5338, respectively.



MOC 1208 1967, Aldo Fraccaroli

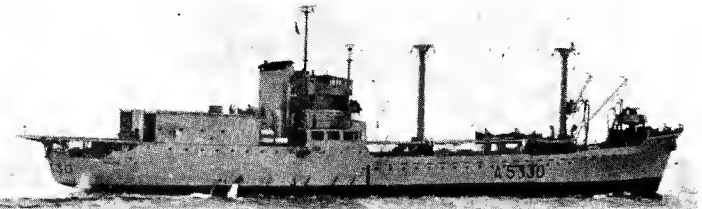
TRANSPORTS (Navi Trasporto)

STROMBOLI A 5329

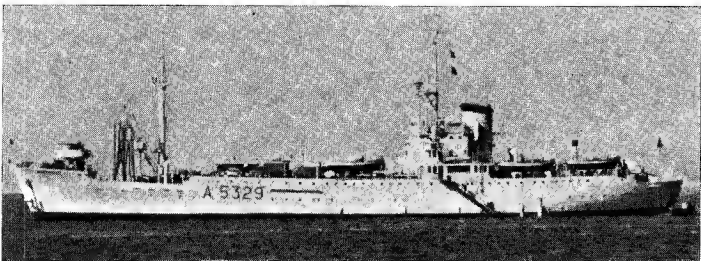
VESUVIO A 5329

Displacement, tons	2 848 light; 4 713 standard; 6 160 full load
Dimensions, feet	334.1 oa x 46 x 21.7
Guns	Stromboli: 1—3.9 in; 4—40 mm, 56 cal Vesuvio: 2—40 mm AA; forward only
Main engines	1 double reduction geared turbine; 3 000 shp = 15 knots
Boilers	3 water tube
Radius, miles	3 340 at 11 knots

Both built by Odero-Terni-Orlando yard, La Spezia. Stromboli was completed in 1948 and Vesuvio in 1954. Stromboli is fitted out as Flagship of the Logistic Support Group of the Fleet. The 3.9 in gun aft has been removed from Vesuvio, which has been converted into a tender for the helicopters carried by Italian warships; she has a hangar abaft the funnel and a flight deck laid on right aft.



VESUVIO (helicopter tender) 1965, Dr. Ing Luigi Accorsi

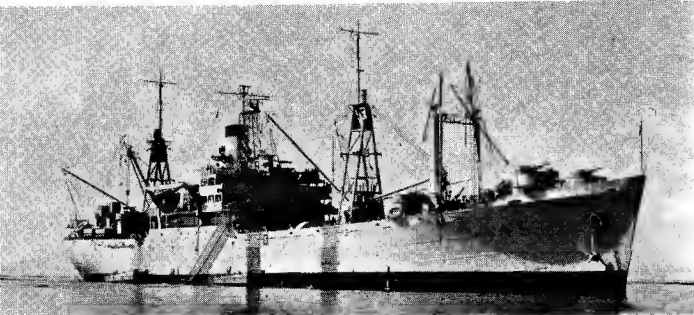


STROMBOLI 1963, Captain Aldo Fraccaroli

ETNA (ex-USS Whitley, AKA 91) A 5328

Displacement, tons	7 430 light; 14 200 full load
Measurement, tons	5 145 gross; 7 700 deadweight
Dimensions, feet	435 wl; 459.2 oa x 63 x 26.3 max
Main Engines	GE geared turbines; 1 shaft; 6 000 shp = 16.5 knots
Boilers	2 Combustion Engineering

Former US attack cargo ship of the "Andromeda" class. Built by Moore DD Co, Oakland, California, launched on 22 June 1944. First commissioned on 21 Sep 1944. C2—S—B 1 type. Transferred to Italy at Norfolk, Virginia in Feb 1962. Rated as Nave trasporto mezzi da sbarco. The old small coastal transport Tarantola has been deleted from the list.

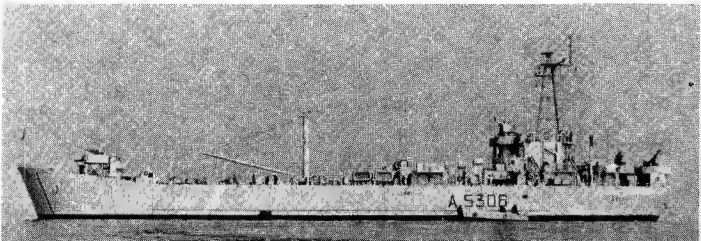


ETNA 1967, Italian Navy, Official

ANTEO (ex-USS Alameda County, AVB 1, ex-LST 32) A 5306

Displacement, tons	1 625 light; 2 366 beaching; 4 080 full load
Dimensions, feet	316 wl; 328 oa x 50 x 14 max
Guns	7—40 mm AA; 2—20 mm AA
Main Engines	GM diesels; 2 shafts; 1 700 bhp = 11.6 knots max

Former US tank landing ship. Built by Dravo Corp, Neville Island, Pa. Laid down on 17 Feb 1943. Launched on 23 May 1943. Completed on 12 July 1943. Re-classified from LST 32 to AVB 1 (Advance Aviation Base ship) on 28 Sep 1957. Transferred to the Italian Navy in Nov 1962 as a transport.



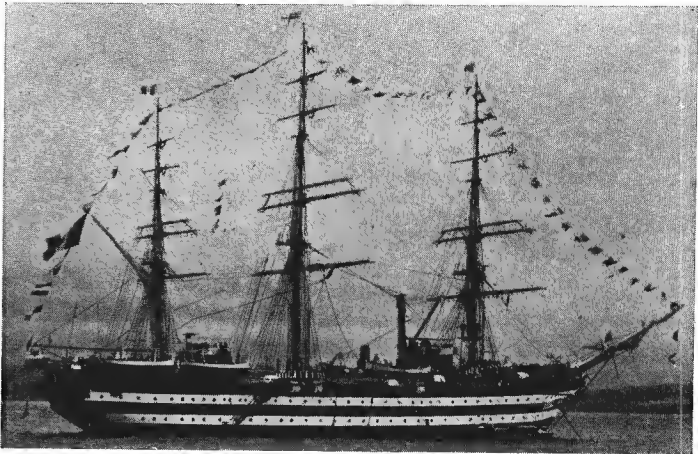
ANTEO 1967, Aldo Fraccaroli

TRAINING SHIPS (Navi Scuola)

AMERIGO VESPUCCI A 5312

Displacement, tons 3 543 standard; 4 146 full load
Dimensions, feet 229 5 pp; 270 oa hull; 330 oa bowsprit x 51 x 22
Guns 4—3 in, 50 cal; 1—20 mm
Main Engines Two Fiat diesels with electric drive to 2 Marelli motors.
1 shaft; 2 000 hp = 10 knots
Sail area 22 604 square feet
Endurance 5 450 miles at 6 5 knots
Complement, tons 400 + 150 midshipmen

Built at Castellammare. Launched on 22 March 1930 and completed in 1931. Hull, masts and yards are of steel. Loud speakers and echo-sounding gear are included in her equipment. Extensively refitted at La Spezia Naval Dockyard in 1964.

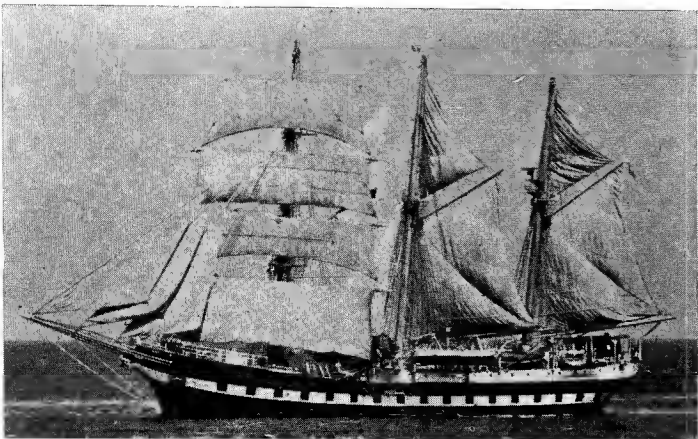


AMERICO VESPUCCI 1963, courtesy Godfrey H. Walker, Esq

PALINURO (ex-Commandant Louis Richard) A 5311.

Displacement, tons 1 042 standard; 1 450 full load
Measurement, tons 858 gross
Dimensions, feet 204 pp, 226 3 oa x 32 x 18 7
Main engines 1 diesel, 1 shaft, 450 bhp = 7 5 knots
Endurance, miles 5 390 at 7 5 knots
Sail area, square feet 1 152

Barquentine, Ex-French, launched in 1920. Purchased in 1950. Rebuilt and commissioned in Italian Navy on 16 July 1955.



PALINURO 1963, Captain Aldo Fraccaroli

CORSARO II

Measurement, tons 41
Dimensions, feet 68 6 x 15 4 x 9 5
Auxiliary engines 1 Mercedes-Benz diesel, 96 bhp
Sail area 2117 square feet

Special yacht for sail training and oceanic navigation. RORC class. Built by Costaguta Yard, Voltri, in 1959-60.

STELLA POLARE

Measurement, tons 47
Dimensions, feet 6 9 x 15 4 x 9 8
Sail area, square feet 2 200
Complement 14

Yawl. Built by Santgerm. Chiavari in 1964-65 as a sail training vessel for the Italian Navy.

DISPOSAL

The training ship *Gazzella* (ex-B 3, ex-M 801), former German fleet minesweeper, subsequently used as an auxiliary ship, then a patrol ship, later a coastal escort (*corvette*) and finally *navi idrografiche*, was removed from the effective list in 1966.

MOTOR TRANSPORTS (Mototrasporti)

13 Ex-German MFP Type

MTC 1001	MTC 1005	MTC 1008	MTC 1101	MTC 1103
MTC 1003	MTC 1006	MTC 1009	MTC 1102	MTC 1104
MTC 1004	MTC 1007	MTC 1010		

Displacement, tons 240 standard
Dimensions, feet 164 x 21 3 x 5 7
Guns 2 or 3—20 or 37 mm
Main Engines 2 or 3 diesels; 500 bhp = 10 knots

Moto-Trasporti Costieri, MTC 1001 to 1010 are Italian MZ (*Motozattere*) type. MTC 1101 to 1104 are ex-German built in Italy. NATO Pennant Nos.: A 5341 and A 5343 to A 5359, respectively, MTC 1002 was removed from the effective list in 1964.



MTC 1003 1965, Italian Navy, Official

19 Ex-U.S. LCM Type

MTM 9901	MTM 9905	MTM 9910	MTM 9914	MTM 9918
MTM 9902	MTM 9906	MTM 9911	MTM 9915	MTM 9919
MTM 9903	MTM 9908	MTM 9912	MTM 9916	MTM 9920
MTM 9904	MTM 9909	MTM 9913	MTM 9917	

Displacement, tons 20 standard
Dimensions, feet 49 5 x 14 8 x 4 2
Guns 2—20 mm AA
Main Engines Diesels, speed 10 knots

Rated as *Moto-Trasporti Medi*. Former US landing craft of the LCM type. MTM 9907 was removed from the effective list in 1967.

28 Ex-U.S. LCVP Type

MTP 9701	MTP 9707	MTP 9713	MTP 9719	MTP 9727
MTP 9702	MTP 9708	MTP 9714	MTP 9720	MTP 9728
MTP 9703	MTP 9709	MTP 9715	MTP 9721	MTP 9729
MTP 9704	MTP 9710	MTP 9716	MTP 9722	MTP 9730
MTP 9705	MTP 9711	MTP 9717	MTP 9723	
MTP 9706	MTP 9712	MTP 9718	MTP 9724	

Displacement, tons 8 standard
Dimensions, feet 36 5 x 10 8 x 3
Guns 2 MG
Main Engines Diesels, Speed: 10 knots

Rated as *Moto-Trasporti Piccoli*. Former US landing craft of the LCVP type. MTP 9726 of 10 tons displacement and similar characteristics is of Italian construction. MTP 9725 was officially removed from the effective list in 1963.

LIGHTHOUSE TENDERS

BUFFOLUTO A 5327

Displacement, tons 930 standard
Dimensions, feet 172 5 pp; 184 2 oa x 29 5 x 11
Main Engines 2 triple expansion; 1 400 ihp = 10 knots
Boilers 2 Thornycroft

Built by S. Giorgio, La Spezia. Launched in 1922. Sister ship *Panigaglia* blew up in July 1947.

RAMPINO A 5309.

Displacement, tons 350 standard; 645 full load
Dimensions, feet 158 8 x 24 2 x 13
Main Engines Triple expansion = 7 knots

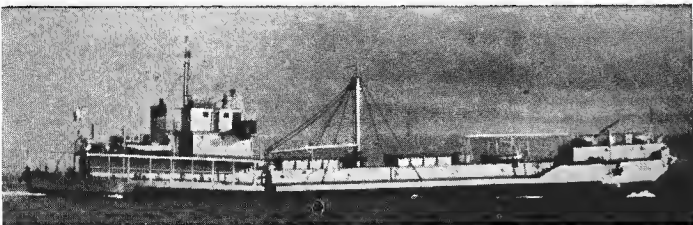
Buoy tender. Of netlayer type. Built at Osaka. Classed as *Nave Ausiliarie*.

3 Ex-British LCT(3) Type

MTF 1301	MTF 1302	MTF 1303
----------	----------	----------

Displacement, tons 296 light; 700 full load
Dimensions, feet 192 x 31 x 7
Guns 1—40 mm, 56 cal AA; 2—20 mm, 70 cal AA
Main Engines Diesel, 1 shaft, speed = 8 knots

Converted landing craft of the British LCT (3) type. Lighthouse motor transports (*Moto-Trasporti Fari*). NATO Pennant Nos.: A 5361, A 5362 and A 5363.



MFT 1302 Added 1959, Italian Navy, Official

OILERS (Navi Cisterna per Nafta)

1 Ex-U.S. T2 Type

STEROPE (ex-Enrico Insom) A 5368

Displacement, tons 5 350 light; 21 800 full load
Dimensions, feet 523.5 oa x 68 x 30.8
Main Engines Turbo-electric; 6 000 shp = 15 knots
Boilers 2 Babcock & Wilcox

Former United States built oiler of the T 2 type acquired by the Italian Navy in 1959 and refitted at Le Spezia Navy Yard in April 1959.



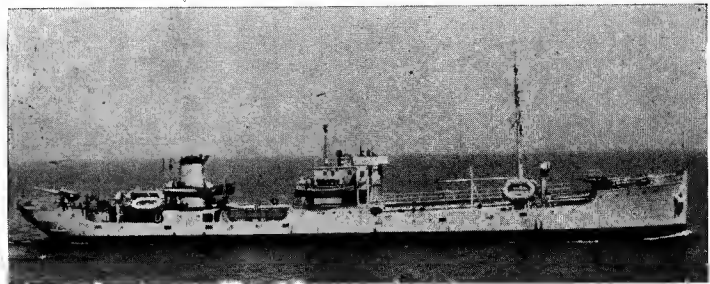
STEROPE 1967, Italian Navy, Official

DALMAZIA A 5367

Displacement, tons 1 466 light; 3 216 standard; 5 000 full load
Dimensions, feet 260 x 32.5 x 15.2
Guns 1—4.7 in; 2—20 mm AA
Main Engines Triple expansion; 2 shafts; 1 450 ihp = 10 knots
Boilers 2 Thornycroft oil-fired
Cargo, tons 1 800

Built by Quarnaro Yard, Fiume, launched in 1922. Formerly classified as a water carrier. Reclassified as a fleet oiler in 1958.

There is also ex-USS YO 247, a small oiler transferred from the United States to Italy under the Military Aid Programme.



DALMAZIA Italian Navy, Official

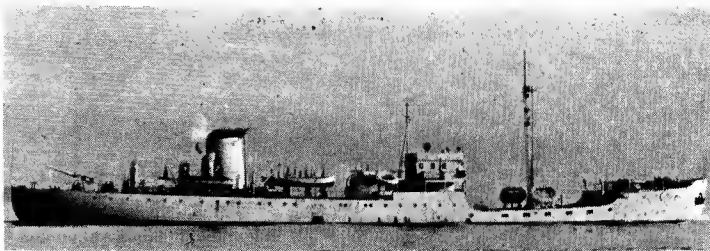
WATER CARRIERS (Navi Cisterna per Acqua)

PO A 5365

VOLTURNO A 5366

Displacement, tons 1 556 light; 3 541 standard; 6 000 full load
Dimensions, feet 270.7 x 38.8 x 16.8
Guns 1—4 in, 35 cal; 2—40 mm; 2—20 mm (Po)
1—4.7 in, 45 cal; 2—40 mm; 2—20 mm AA (Volturno)
Main Engines Triple expansion; 1 700 ihp = 11.5 knots
Boilers 2 oil-fired watertube
Oil fuel (tons) 226

Po was launched by Cant Nav Riuniti, Ancona, on 21 Dec 1936. Volturno was built by Cantieri del Tirreno, Riva, Trigoso, in 1936-37, and rebuilding was completed in 1951. Volturno has radar mast (see photo). Cargo capacity: 2 200 tons.



VOLTURNO Italian Navy, Official

5 Ex-U.S. YW Type

ADIGE (ex-YW 92)
FLEGETONTE (ex-YW 95)

ISONZO (ex-YW 77)

TICINO (ex-YW 79)
TANARO (ex-YW 99)

Displacement, tons 436 standard; 1 470 full load
Guns 3—20 mm, 70 cal AA
Main Engines 2 diesels; 315 hp = 8 knots

Ex-US Army. NATO Pennant Nos.: A 5369, A 5371, A 5372, A 5376 and A 5377, respectively. Water capacity: 850 tons.

Water Carriers—continued

SESIA A 5375

Displacement, tons 1 050
Dimensions, feet 213.2 x 33 x 11.2
Guns 3—20 mm, 70 cal AA
Main Engines Fiat diesels; 2 shafts; 600 bhp = 8 knots

Built by Adriatico. Launched in 1933. Fitted for minelaying.

METAURO A 5373

Displacement, tons 592
Dimensions, feet 133.2 x 26.5 x 10.5
Guns 1—20 mm, 70 cal AA
Main Engines Tosi diesels; 400 bhp = 8 knots

Built by C. N. Quarnaro-Fiume. Launched in 1933

ARNO A 5370

Displacement, tons 634
Dimensions, feet 138.8 x 26 x 10
Guns, 1—20 mm, 70 cal AA
Main Engines 1 Fiat diesel; 350 bhp = 8 knots

Built by Odero-Terni-Orlando, La Spezia. Launched in 1929.

MINCIO A 5374

Displacement, tons 645
Dimensions, feet 138.5 x 26.2 x 10
Guns 1—20 mm, 70 cal AA
Main Engines Tosi diesels; 350 bhp = 8 knots

Built in Venice. Launched in 1929.

TIMAVO

Displacement, tons 265
Main Engines 1 Tosi diesel; 200 bhp = 8 knots

Built by COMI, Venezia, 1926. Sister ship Vipacco was removed from the effective list in 1961.

FRIGIDO (ex-Fukuju Maru)

Displacement, tons 398
Dimensions, feet 116.5 x 21.5 x 10
Guns 2 MG
Main Engines Triple expansion; 221 ihp = 7 knots
Boilers 1 cylindrical

Built by Osaka. Launched in 1912. Purchased in 1916.

OFANTO

Displacement, tons 250
Dimensions, feet 105.5 x 19.7 x 7.5
Main Engines 1 Triple expansion; 165 ihp = 6 knots
Boilers 1

Built by SEB, Riva Trigoso, 1913-14.

LENO SIMETO SPRUGOLA STURA TRONTO
Small water carriers of 270, 167, 212, 126 and 110 tons displacement, respectively.

TUGS (Rimorchiatori)

CIRCEO

TAVOLARA

Both completed in 1955. Minor tugs for local and general purposes.

AUSONIA

PANARIA

Displacement, tons 240

Both launched in 1948. Coastal tugs for general utility duties.

CICLOPE A 5319

TITANO A 5320

Displacement, tons 1 200
Dimensions, feet 157.5 x 32.5 x 13
Main Engines Triple expansion; 1 shaft; 1 000 ihp = 8 knots

Both were launched in 1948. Sister ship Nereo was discarded in 1957.

MISENO

MONTE CRISTO

Displacement, tons 285

Former United States Navy harbour tugs.

GAGLIARDO A 5322

ROBUSTO A 5323

Displacement, tons 389 standard; 506 full load
Main Engines 1 000 ihp = 8 knots

Both launched in 1939.

PORTO EMPEDOCLE

Displacement, tons 330 standard
Main Engines 500 ihp = 11 knots

Launched in 1934. Employed as a harbour tug. Armament of 1—3 in gun removed.

PORTO FOSSONE

PORTO RECANATI

PORTO VECCHIO

PORTO PISANO

PORTO TORRES

SALVORE

Displacement, tons 226 to 270
Dimensions, feet 88.8 x 22 x 10
Main Engines 600 ihp = 9 knots

TINO

All launched in 1936-37, except Tino, 1931. Principally employed as harbour tugs. Armament of 1—3 inch gun removed. Porto Rosso was deleted from the list in 1965.

ATLETA (ex-LT 152)

FORTE (ex-LT 159)

COLOSSO (ex-LT 214)

TENACE (ex-LT 154)

Displacement, tons 525 standard; 835 full load
Dimensions, feet 142.8 x 32.8 x 11
Main Engines 2 diesel-electric; 690 hp = 11 knots

Ex-US Army. Pennant Nos.: A 5318, A 5320, A 5321, A 5324, respectively.

Tugs—continued

ATLANTE A 5317

Displacement, tons	355
Dimensions, feet	212.3 × 23 × 9
Main Engines	900 ihp = 11 knots

Launched in 1928. Sunk by collision in harbour at Genoa in Jan 1948, but later salvaged. Armament of 1—3 inch gun removed.

LIPARI

VENTIMIGLIA

Displacement, tons	254 (Lipari); 230 (Ventimiglia)
Dimensions, feet	108.2 × 23 × 7.2 (Lipari)
Main Engines	(Lipari) 500 hp = 9 knots; (Ventimiglia) 550 = 10 knots

Lipari was built in 1917. There are also 55 harbour tugs, ferry tugs, lagoon tugs, numbered tugs and minor tugs.

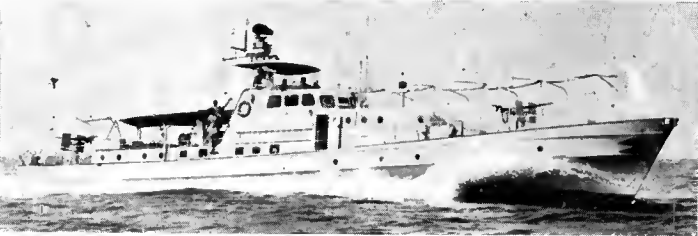
IVORY COAST

1 Ex-French VC Type

PERSEVERANCE (ex-VC 9, P 759)

Displacement, tons	75 standard; 82 full load
Dimensions, feet	104.5 × 17 × 6
Guns	2—20 mm AA
Main Engines	2 Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots
Oil fuel (tons)	10
Radius, miles	1 100 at 16.5 knots; 800 at 21 knots
Complement	15

Former French seaward defence motor launch. Built by Constructions Mecaniques de Normandie, Cherbourg. Completed in 1958. Transferred from France to Ivory Coast in 1963.



PERSEVERANCE 1964, Ivory Coast Armed Forces, Official

1 Ex-U.S. SC Type

PATIENCE (ex-P 699, ex-CH 71, ex-US SC 1337)

Displacement, tons	110 standard; 138 full load
Dimensions, feet	107.5 wl; 110.8 oa × 17 × 6.5
Guns	1—40 mm AA; 3—20 mm AA
Main Engines	2 GM diesels; 2 shafts; 1 000 bhp = 15 knots
Oil fuel (tons)	15
Radius, miles	2 000 at 10 knots; 1 150 at 15 knots
Complement	25

Former United States wooden submarine chaser. Transferred from the USA to France on 29 Dec 1943, and from France to Ivory Coast in 1961.



PATIENCE 1964, Ivory Coast Armed Forces, Official

JAMAICA

Defence Force Coast Guard

Jamaica, which became independent within the Commonwealth, on 6 Aug 1962, is forming its own Navy. The Jamaican Government signed an agreement with the United States for the transfer of a small number of coastguard vessels for the new navy. Great Britain agreed to lend officers to the new navy to train local personnel. The British Mission included a technical team to survey sites for the establishment of local naval bases.

Administration

Officer Commanding Jamaican Defence Force Coast Guard:
Lieutenant-Commander G. B. L. Copland

—continued

PATROL BOATS

2 + 2 New Construction

DISCOVERY BAY P 4

HOLLAND BAY P 5

Displacement, tons	60
Dimensions, feet	85 × 18.8 × 5.9
Guns	3—50 cal Browning
Main Engines	2 GM 16 V71 N diesels; 2 shafts; 700 bhp = 21 knots
Oil fuel, tons	13
Radius, miles	500 at 12 knots
Complement	10

Built by Sewart Seacraft Inc, Berwick, La, USA. All aluminium construction. *Discovery Bay*, the prototype of a new class of patrol boats, was launched in Aug 1966 and named and commissioned on 3 Nov 1966. *Holland Bay*, completed in 1967, was supplied under the US Military Assistance Programme. Of two new construction vessels, one will be received under MAP and the other purchased by the Government of Jamaica.



DISCOVERY BAY 1967, Jamaica Coast Guard



DISCOVERY BAY 1967, courtesy ALCOA

2 Ex-U.S. AVR Type

MANDINGO P 1

COROMANTEE P 2

Displacement, tons	33
Dimensions, feet	63 × 15.5 × 3.5
Guns	2—50 Browning
Main engines	2 GM V8 diesels; 2 shafts; 295 bhp = 16 knots
Oil fuel (tons)	7
Radius, miles	300 at 13 knots
Complement	8

Former USAF patrol boats of the AVR type. Built in 1941. Of wooden construction. Three of these craft were given to the Jamaican Defence Force by the United States Government in Feb 1964. *Yoruba*, P 3, was returned in Mar 1966. The other two will be withdrawn from service on delivery of new vessels.



MANDINGO 1967, Jamaica Coast Guard

JAPAN

Administration

Chief of the Maritime Staff, Defence Agency:
Admiral Takaichi Itaya

Commander-in-Chief, Self-Defence Fleet:
Vice Admiral Takahide Aioi

Chief, Administration, Maritime Staff Office:
Rear Admiral Suteo Ishida

Diplomatic Representation

Defence (Naval) Attaché in London:
Captain Goro Yoshimura

Defence (Naval) Attaché in Washington:
Captain Fumiro Shimizu

Five Year Defence Build-up Plan

Under the third 5-year defence programme (from 1968 to 1972), Japan is building 56 new warships aggregating 48,000 tons, including 2 destroyers (equipped with ASW helicopters) of 4,700 tons, 1 destroyer (with SAM) of 3,900 tons, 3 destroyers of 2,000 tons, 8 destroyer escorts of 1,450 tons and 5 submarines of 1,800 tons.

New Construction Programmes

- 1967: 1 Destroyer (3,000 tons new type)
1 Destroyer (2,000 tons new type)
1 Submarine (1,600 tons killer type)
1 Training Ship (3,500 tons)
2 Coastal Minesweepers (340 tons)
- 1966: 1 Destroyer (3,000 tons new type)
1 Destroyer (2,000 tons new type)
1 Submarine (1,600 tons killer type)
2 Coastal Minesweepers (340 tons)
- 1965: 1 Destroyer (3,000 tons new type)
1 Destroyer (2,000 tons new type)
1 Submarine (1,600 tons killer type)
6 Auxiliaries and Service Craft
- 1964: 1 Destroyer (3,000 tons new type)
1 Destroyer (2,000 tons new type)
1 Submarine (1,600 tons killer type)
1 Submarine Chaser (480 tons)
2 Coastal Minesweepers (340 tons)
- 1963: 1 Destroyer (3,000 tons new type)
1 Destroyer (2,000 tons new type)
1 Submarine (1,600 tons killer type)
1 Submarine Chaser (480 tons)
2 Coastal Minesweepers (340 tons)

Strength of the Fleet

- 8 Submarines (Diesel Powered)
23 Destroyers (1 Guided Missile Type)
17 Frigates
20 Fast Patrol Vessels
2 Minelayers
32 Coastal Minesweepers
10 Motor Torpedo Boats
3 Landing Ships
100 Support Ships and Service Craft

Personnel

- 1967: 41,626 (6,589 officers, 30,002 men, 5,035 civil)
1966: 40,160 (6,300 officers, 28,880 men, 4,980 civil)
1965: 39,943 (6,210 officers, 28,832 men, 4,901 civil)

Coast Guard

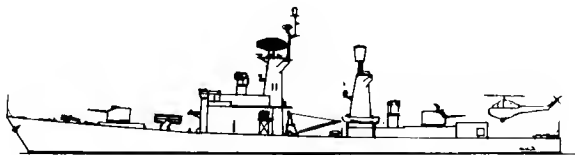
87 patrol vessels, 42 patrol craft, 169 coastal craft, 26 surveying vessels, 26 tenders.

Mercantile Marine

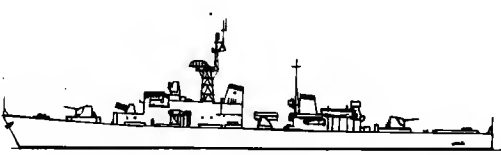
Lloyd's Register of Shipping:
6,105 vessels of 14,722,805 tons gross

Silhouettes

Scale: 150 feet = 1 inch



KIKUZUKI, TAKATSUKI



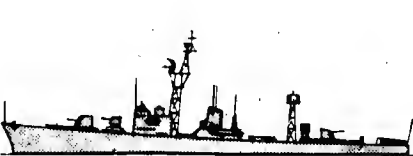
ASAGUMO, MAKIGUMO, YAMAGUMO



AMATSUKAZE



KITAKAMI, OOI



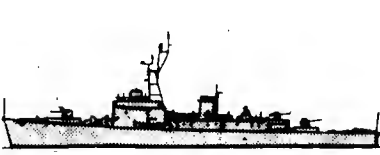
ISUZU, MOGAMI



AKIZUKI, TERUZUKI



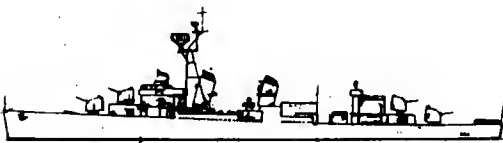
ARIAKE



IKAZUCHI, INAZUMA



HARUSAME, MURASAME, YUDACHI



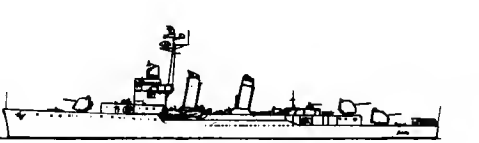
YUGURE



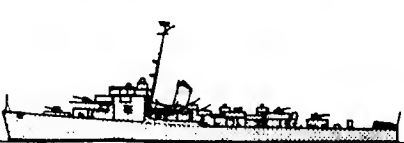
AKEBONO



AYANAMI Class



ASAKAZE, HATAKAZE



ASAHI, HATSUHI



HARUKAZE, YUKIKAZE



WAKABA



KAYA Class

SUBMARINES

New Construction
3+3 "Ōshio" Class

Name	No.	Builders	Laid down	Launched	Completed
ASASHIO	SS 562	Kawasaki Jyuko Co, Kobe	10 Oct 1964	27 Nov 1965	13 Oct 1966
HARUSHIO	SS 563	Mitsubishi Jyuko Co, Kobe	12 Oct 1965	25 Feb 1967	
ŌSHIO	SS 561	Mitsubishi Jyuko Co, Kobe	29 June 1963	30 Apr 1964	10 Apr 1965

Displacement, tons 1 600 standard
Length, feet (metres) 288.7 (88.0)
Beam, feet (metres) 27 (8.2)
Draught, feet (metres) 15.4 (4.7)
Torpedo tubes 8—21 in (533 mm); 6 bow, 2 stern
Main engines 2 Kawasaki MAN diesels, 2 300 bhp; 2 electric motors 6 300 hp; 2 shafts
Speed, knots 14 on surface, 18 submerged
Complement 80

Ōshio was built under the 1961 fiscal year new construction programme. Cost \$5 600 000. A bigger design to obtain improved seaworthiness, a larger torpedo capacity and more comprehensive sonar and electronic devices. She is capable of deep diving, the first submarine of this propensity of all submarines built before or after the Second World War in Japanese yards. Asashio means "Morning Tide" and Ōshio means "Flood Tide" or "Big Tide". Asashio was built under the 1963 programme, and Harushio and three more are being built under the Second Five Year Defence Plan (1962 to 1966).



ŌSHIO 1967, Mitsubishi Heavy Industries Ltd

4 "Hayashio" Class

Name	No.	Builders	Laid down	Launched	Completed
FUYUSHIO	SS 524	Kawasaki Jyuko Co, Kobe	6 Dec 1961	14 Dec 1962	17 Sep 1963
HAYASHIO	SS 521	Shin Mitsubishi Jyuko Co, Kobe	6 June 1960	31 July 1961	30 June 1962
NATSUSHIO	SS 523	Shin Mitsubishi Jyuko Co, Kobe	5 Dec 1961	18 Sep 1962	29 June 1963
WAKASHIO	SS 522	Kawasaki Jyuko Co, Kobe	7 June 1960	28 Aug 1961	17 Aug 1962

Displacement, tons 750 standard (SS 521, 522); 780 standard (SS 523, 524) officially revised figures
Length, feet (metres) 193.6 (59.0) oa (SS 521, 522); 200.1 (61.0) oa (SS 523, 524)
Beam, feet (metres) 21.3 (6.5)
Draught, feet (metres) 13.5 (4.1)
Torpedo tubes 3—21 in (533 mm); bow
Main engines 2 diesels, total 1 350 hp; 2 shafts
2 electric motors, total 1 700 hp
Speed, knots 11 on surface; 14 submerged
Complement 40

Medium submarines of improved type, with more efficient sonar devices, giving them slightly increased displacement. Very handy and successful boats, with a large safety factor, complete air conditioning and good habitability.

CONSTRUCTION. Hayashio and Wakashio were built under the 1959 fiscal year new construction programme and Natsushio and Fuyushio under the 1961 programme.

NOMENCLATURE. Fuyushio means "Winter Tide" Hayashio "Swift Tide", Natsushio "Summer Tide", and Wakashio "Young Tide".

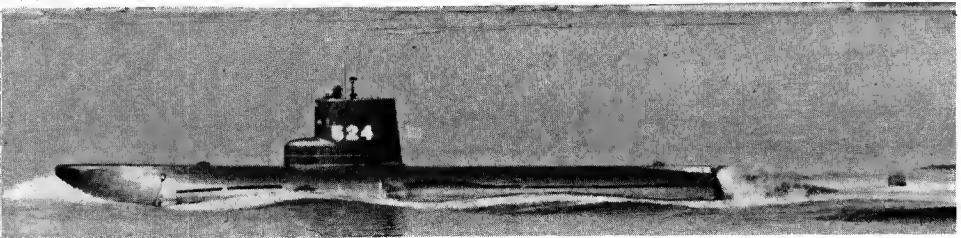
PHOTOGRAPHS of Hayashio appear in the 1962-63 to 1964-65 editions, and of Wakashio in the 1964-66 to 1966-67 editions.

NUCLEAR POWER STUDY
The Director of the Japanese Defence Agency stated on 5 May 1955 that Japan was studying the possibility of building a nuclear powered submarine. In the meantime, conventional submarines would be ordered.

DISPOSAL
The former United States submarine of the "Gato" class, Kuroshio, SS 501 (ex-USS Mingo, SS 261) was officially taken out of commission on 31 Mar 1966.



NATSUSHIO 1967, Mitsubishi Heavy Industries Ltd



FUYUSHIO 1965, Japanese Maritime Self-Defence Force, Official

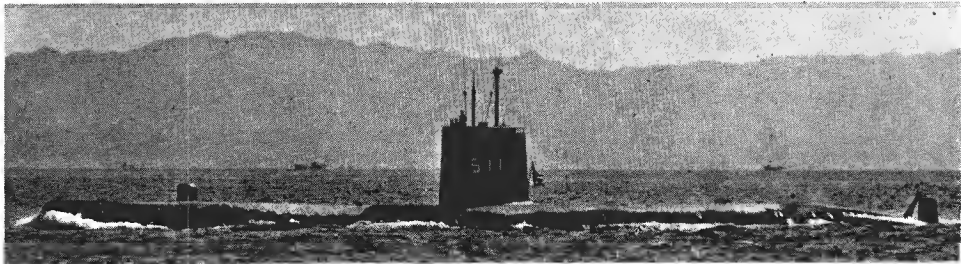
1 "Oyashio" Class

Name	No.	Builders	Laid down	Launched	Completed
OYASHIO	SS 511	Kawasaki Jyuko Co, Kobe	25 Dec 1947	25 May 1959	30 June 1960

Displacement, tons 1 130 surface; 1 420 submerged
Length, feet (metres) 258.5 (78.8)
Beam, feet (metres) 23 (7.0)
Draught, feet (metres) 15.2 (4.6)
Torpedo tubes 4—21 in (533 mm); 10 torpedoes
Main engines 2 diesels, total 2 700 hp; 2 electric motors, total 5 960 hp
Speed, knots 13 on surface; 19 submerged
Radius, miles 5 000 at 10 knots
Complement 65

Ordered under the 1956 Programme. The first submarine built in a Japanese shipyard after the Second World War, Oyashio is the name of a tide stream in the Pacific off Honshu. First estimated to cost £2 718 000, but this figure was exceeded.

An oblique aerial view of Oyashio appears in the 1961-62 to 1965-66 editions.



OYASHIO 1966, Japanese Maritime Self-Defence Force, Official

New Construction
Anti-Submarine Type
2+2 Improved "Moon" Class

Displacement, tons	3 050 (official figure)
Length, feet (metres)	446 2 (136 0) oa
Beam, feet (metres)	44 0 (13 4)
Draught, feet (metres)	14 5 (4 4)
Aircraft	DASH helicopter
A/S	Octuple Asroc; 1 four barrelled rocket launcher
Guns, dual purpose	2—5 in (127 mm) 54 cal. single
Torpedo launchers	2 triple for A/S homing torpedoes
Boilers	2 Mitsubishi CE
Main engines	2 Mitsubishi WH geared turbines
	60 000 shp; 2 shafts
Speed, knots	32
Complement	270

Takatsuki was provided for under the 1963 fiscal year new construction programme. She is equipped with a drone anti-submarine helicopter with hangar. Takatsuki means "High Moon". Kikusuki is being built under the 1964 fiscal year new construction programme, and two more are included in the Second Five Year Defence Plan (1962 to 1966). These ships have two "macks" or combined masts and stacks.

DESTROYERS					
Name	No.	Builders	Laid down	Launched	Completed
KIKUZUKI	DD 165	Mitsubishi Jyuko Co, Nagasaki	15 Mar 1966		
TAKATSUKI	DD 164	Ishikawajima Jyuko Co, Tokyo	8 Oct 1964	7 Jan 1966	15 Mar 1967



TAKATSUKI

1967, Japanese Maritime Self-Defence Force, Official

New Construction
Diesel Type
3+4 "Cloud" Class

Displacement, tons	2 050 (official figure)
Length, feet (metres)	374 (114 0)
Beam, feet (metres)	38 7 (11 8)
Draught, feet (metres)	12 8 (3 9)
A/S	Octuple Asroc; 1 four-barrelled rocket launcher
Guns, AA	4—3 in (76 mm) 50 cal., 2 twin
Torpedo launchers	2 triple for A/S homing torpedoes
Main engines	6 Mitsui (Yamagumo), Mitsubishi (Asagumo, Makigumo) B & W diesels; 26 500 bhp; 2 shafts
Speed, knots	27
Complement	210

Yamagumo was ordered under the 1962 fiscal year new construction programme, Makigumo under the 1963 programme, and Asagumo under the 1964 programme. Makigumo means "Rolling Cloud", and Yamagumo means "Mountain Cloud". Four more ships are being built under the Second Five Year Defence Plan (1962 to 1966).

Name	No.	Builders	Laid down	Launched	Completed
ASAGUMO	DD 115	Maizuru Jyuko Co, Maizuru	24 June 1965	25 Nov 1966	
MAKIGUMO	DD 114	Uraga Dock Co, Yokosuka	10 June 1964	26 July 1965	29 Nov 1966
YAMAGUMO	DD 113	Mitsui Zosen Co, Tamano	23 Mar 1964	27 Feb 1965	30 Oct 1966



MAKIGUMO

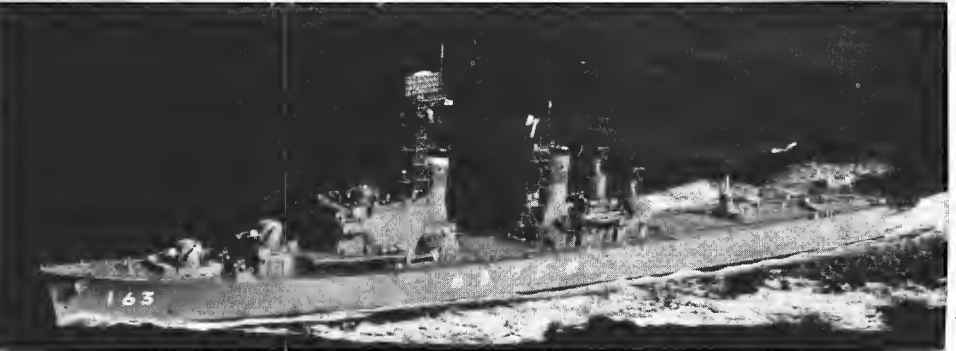
1966, Japanese Maritime Self-Defence Force, Official

1 Guided Missile Armed Type

Displacement, tons	3 050 standard; 4 000 full load
Length, feet (metres)	429 8 (131 0)
Beam, feet (metres)	44 (13 4)
Draught, feet (metres)	13 8 (4 2)
Missiles, A/A	1 single "Tartar" launcher
Guns, AA	4—3 in (76 mm) 50 cal., 2 twin
A/S	2 hedgehogs
Torpedo dropping gear	1 each side for A/S short torpedoes
Boilers	2 Ishikawajima Foster Wheeler
Main engines	2 Ishikawajima GE geared turbines
	60 000 shp; 2 shafts
Speed, knots	33
Oil fuel (tons)	900
Complement	290

The largest naval vessel completed in Japan after the Second World War, and the first to be armed with guided missiles. Distinguished by clean lines, flush deck and minimum superstructure. Ordered under the 1960 fiscal year new construction programme. Equipped with "Tartar" surface-to-air guided missiles supplied from the USA. Designed to carry and operate a helicopter. Amatsukaze means "Heaven Wind".

1967,					
Name	No.	Builders	Laid down	Launched	Completed
AMATSUKAZE	DD 163	Mitsubishi, Nagasaki	29 Nov 1962	5 Oct 1963	15 Feb 1965



AMATSUKAZE

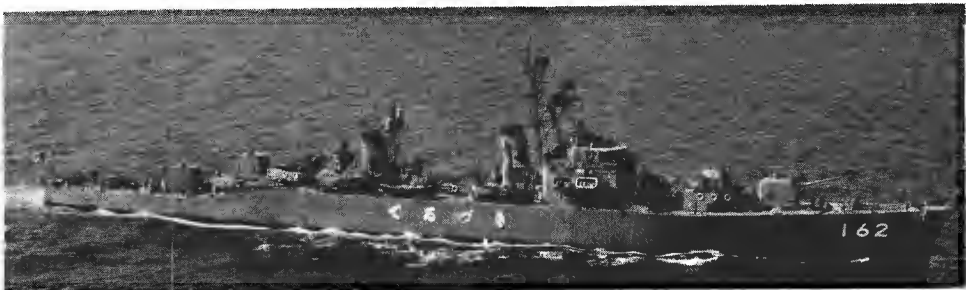
1967, Japanese Maritime Self-Defence Force, Official

Destroyers—continued

2 "Moon" Class
(U.S. "Off-shore" Programme)

Name	No.	Builders	Laid down	Launched	Completed
AKIZUKI	DD 161	Mitsubishi Zosen Co, Nagasaki	31 July 1958	26 June 1959	13 Feb 1960
TERUZUKI	DD 162	Shin Mitsubishi Jyuko Co, Kobe	15 Aug 1958	24 June 1959	29 Feb 1960

Displacement, tons	2 350 standard; 2 890 full load
Length, feet (metres)	387.2 (118.0) oa
Beam, feet (metres)	39.4 (12.0)
Draught, feet (metres)	13.1 (4.0)
Guns, dual purpose	3—5 in (127 mm) 54 cal. single
Guns, AA	4—3 in (76 mm) 50 cal, 2 twin
Torpedo tubes	4—21 in (533 mm) quadrupled
A/S	1—US model Mk 108 rocket launcher; 2 hedgehogs; 2 Y-mortars; 2 DCT
Boilers	2 Mitsubishi CE type
Main engines	2 geared turbines— Akizuki: Mitsubishi Escher-Weiss Teruzuki: Westinghouse 45 000 shp, 2 shafts
Speed, knots	32
Complement	330



TERUZUKI

Added 1966, Skyfotos

Destroyers of novel design with long forecastle hull. Received from USA as part of the 1957 Military Aid Programme, but built in Japanese shipyards under an off-shore procurement agreement. US Navy hull numbers

DD 940 and DD 961. They were designed as flotilla leaders to serve as senior officers' ships, and are equipped with two homing torpedo launchers, two radar systems and two sonar installations. Akizuki means "Autumn

Moon"; Teruzuki means "Shining Moon".

PHOTOGRAPHS. A port bow oblique aerial view of Akizuki appears in the 1961-62 to 1965-66 editions.

Anti-Submarine ("A" Type DDK)
7 "Wave" Class

Name	No.	Builders	Laid down	Launched	Completed
AYANAMI	DD 103	Mitsubishi Zosen Co, Nagasaki	20 Nov 1956	1 June 1957	12 Feb 1958
ISONAMI	DD 104	Shin Mitsubishi Jyuko Co, Kobe	14 Dec 1956	30 Sep 1957	14 Mar 1958
SHIKINAMI	DD 106	Mitsui Zosen Co, Tamano	24 Dec 1956	25 Sep 1957	15 Mar 1958
TAKANAMI	DD 110	Mitsui Zosen Co, Tamano	8 Nov 1958	8 Aug 1959	30 Jan 1960
URANAMI	DD 105	Kawasaki Jyuko Co, Tokyo	1 Feb 1957	29 Aug 1957	27 Feb 1958
ONAMI	DD 111	Ishikawajima Jyuko Co, Tokyo	20 Mar 1959	13 Feb 1960	29 Aug 1960
MAKINAMI	DD 112	Iino Jyuko Co, Maizuru	20 Mar 1959	25 Apr 1960	30 Oct 1960

Displacement, tons	1 700 standard; 2 500 full load
Length, feet (metres)	357.6 (109.0) oa
Beam, feet (metres)	35.1 (10.7)
Draught, feet (metres)	12 (3.7) max
Guns, AA	6—3 in (76 mm) 50 cal. 3 twin
A/S	2 US Model Mk 15 Hedgehogs; 2 Y-mortars
Torpedo tubes	4—21 in (533 mm) quadrupled
Torpedo launchers	4 fixed, for A/S homing torpedoes
Boilers	2 (see Engineering)
Main engines	2 Mitsubishi Escher-Weiss geared turbines 35 000 shp; 2 shafts
Speed, knots	32
Complement	230

Built under the 1955 Programme (Ayanami, Isonami, Shikinami, Uranami); 1957 Programme (Takanami) and 1958 Programme (Onami, Makinami).

ANTI-SUBMARINE. The Hedgehog type depth charge throwers are mounted on turntables before the bridge. Four torpedo loading racks are mounted in pairs abreast the after funnel. Droppers for anti-submarine homing torpedoes are mounted on the quarter deck.

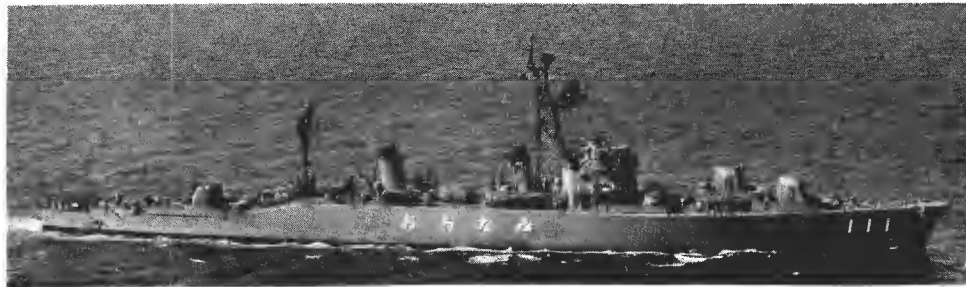
GUNNERY. To facilitate ammunition supply the armament was designed to take standard US shell.

ENGINEERING. Types of boilers installed are as follows: Mitsubishi CE in Ayanami, Isonami and Uranami; Hitachi Babcock & Wilcox in Onami, Shikinami and Takanami; Kawasaki Jyuko 8D in Makinami.

CLASS. Reported to be very successful ships. The largest batch of destroyers of a single design put in hand since the Second World War.

NOMENCLATURE. Ayanami means "Weave Wave", Isonami means "Shore Wave", Shikinami means "Spread Wave", Takanami means "High Wave", Uranami means "Small Bay Wave", Onami means "Billow Wave" and Makinami means "Roller Wave".

PHOTOGRAPHS of Uranami appear in the 1958-59 to 1960-61 editions, of Isonami and Murasame (Addenda) in the 1959-60 editions, of Onami (Addenda) in the 1960-61 edition, and of Takanami in the 1961-62 and 1962-63 editions. Another, starboard broadside surface view, of Makinami appears in the 1963-64 to 1965-66 editions.



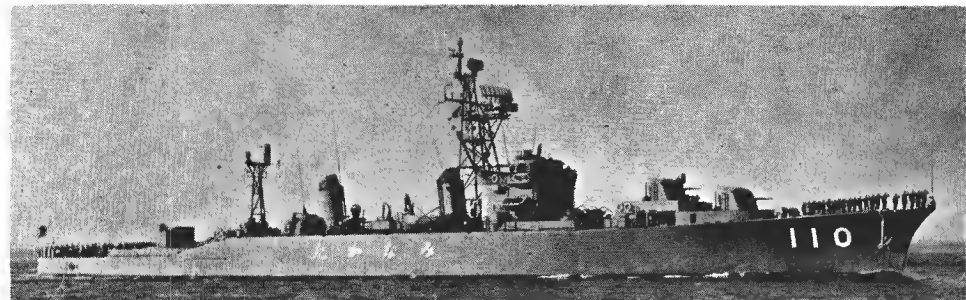
ONAMI

Added 1966, Skyfotos



MAKINAMI

1966, Japanese Maritime Self-Defence Force, Official



TAKANAMI

Added 1966, Wright & Logan

Anti-Aircraft Type
3 "Rain" Class

Displacement, tons	1 800 standard; 2 500 full load
Length, feet (metres)	354.3 (108.0) oa
Beam, feet (metres)	36 (11.0) oa
Draught, feet (metres)	12.2 (3.7)
Guns, dual purpose	3—5 in (127 mm) 54 cal.
Guns, AA	4—3 in (76 mm) 50 cal., 2 twin
A/S	8 short torpedoes; 1 Hedgehog; 1 DC rack; 1 Y-gun
Boilers	2 (see Engineering notes)
Main engines	2 sets geared turbines
Speed, knots	30
Complement	250

Murasame and *Yūdachi* were built under the 1956 Programme, *Harusame* 1957 Programme. *Harusame* means "Spring Rain", *Murasame* means "Shower".

A photograph of *Harusame* appears in the 1960-61 to 1962-63 editions, and of *Murasame* in the 1963-64 to 1965-66 editions.

2 "Wind" Class

Displacement, tons	1 700 standard; 2 340 full load
Length, feet (metres)	347.8 (106.0) wl, 358.5 (109.3) oa
Beam, feet (metres)	34.5 (10.5)
Draught, feet (metres)	12.0 (3.7)
Guns, dual purpose	3—5 in (127 mm) 38 cal.
Guns, AA	8—40 mm (2 quadruple)
A/S	Tubes for short homing torpedoes; 2 Hedgehogs; 1 DC rack; 4 K-guns
Boilers	<i>Harukaze</i> : 2 Hitachi-8abcock <i>Yukikaze</i> : 2 Combustion Engineering
Main engines	2 sets geared turbines; <i>Harukaze</i> : 2 Mitsubishi Escher Weiss <i>Yukikaze</i> : 2 Westinghouse
Speed, knots	30
Radius, miles	6 000 at 18 knots
Oil fuel (tons)	557
Complement	240

Authorized under the 1953 fiscal year programme. First destroyer hulled vessels built in Japan after the Second World War. Electric welding was extensively adopted in hull construction; development and usage of weldable high tension steel in main hull and light alloy in superstruc-

Destroyers—continued

Name	No.	Builders	Laid down	Launched	Completed
HARUSAME	DD 109	Uruga Dock Co, Yokosuka	17 June 1958	18 June 1959	15 Dec 1959
MURASAME	DD 107	Mitsubishi Zosen Co, Nagasaki	17 Dec 1957	31 July 1958	28 Feb 1959
YŪDACHI	DD 108	Ishikawajima Jyuko Co, Tokyo	16 Dec 1957	29 July 1958	25 Mar 1959



YŪDACHI

1966, Japanese Maritime Self-Defence Force, Official

ENGINEERING. *Murasame* has Mitsubishi Jyuko turbines and Ishikawajima Harima Jyuko turbines and Ishikawajima bines and Mitsubishi CE boilers, and the other two have FW-D boilers.

Name	No.	Builders	Laid down	Launched	Completed
HARUKAZE	DD 101	Mitsubishi Zosen Co, Nagasaki	15 Dec 1954	20 Sep 1955	26 Apr 1956
YŪKIKAZE	DD 102	Mitsubishi Jyuko Co, Kobe	17 Nov 1954	20 Aug 1955	31 July 1956



YŪKIKAZE

1966, Japanese Maritime Self-Defence Force, Official

ture were also novel. Nearly all armament was supplied from the USA under the MSA clause. *Harukaze* means "Spring Wind", *Yukikaze* means "Snow Wind".

Armament was modified in Mar. 1959 when homing

torpedo tubes were mounted and depth charge equipment correspondingly reduced. Photographs of *Harukaze* appear in the 1956-57 to 1961-62 editions and 1963-64 to 1965-66 editions.

U.S. Later "Fletcher" Type
2 "Twilight" Class

Displacement, tons	2 050 standard; 3 040 full load
Length, feet (metres)	376.5 (114.8)
Beam, feet (metres)	39.3 (12.0)
Draught, feet (metres)	18 (5.5) max
Guns, dual purpose	<i>Ariake</i> : 3—5 in (127 mm) 38 cal. <i>Yugure</i> : 4—5 in (127 mm) 38 cal.
Guns, AA	10—40 mm
A/S	<i>Ariake</i> : Mk 108 rocket launcher (Weapon A); dropping gear for short homing torpedoes on each side; <i>Yugure</i> 2 Hedgehogs
Boilers	4 Foster Wheeler
Main engines	GE geared turbines
Speed, knots	60 000 shp; 2 shafts
Complement	35
	300

Transferred on loan from the US Navy on 10 Mar 1959 and towed to Japan for refit, during which No. 3 5 inch gun was removed. *Ariake* means "Dawn Twilight" *Yugure* means "Evening Dusk".

U.S. "Gleaves-Livermore" Type
2 "Breeze" Class

Displacement, tons	1 630 standard; 2 775 full load
Length, feet (metres)	341 (104.0) wl, 348.3 (106.2) oa
Beam, feet (metres)	36 (11.0)
Draught, feet (metres)	18 (5.5) max
Guns, dual purpose	3—5 in (127 mm) 38 cal.
Guns, AA	8—40 mm; 4—20 mm
A/S	2 DC racks
Boilers	4 Babcock & Wilcox
Main engines	Geared turbines
Speed, knots	50 000 shp; 2 shafts
Complement	36 designed; 30 present
	270

Former US destroyers DD 454 (ex-DMS 19) and DD 458 (ex-DMS 23) respectively. Taken over from the USA on 19 Oct 1954. Names mean "Morning Breeze" and "Flag-fluttering Breeze", respectively.

A photograph of *Hatakaze* appears in the 1963-64 to 1965-66 editions.

Name	No.	Builders	Launched	Completed
ARIAKE (ex-USS Heywood L. Edwards, DD 663)	DD 183	Boston Navy Yard	6 Oct 1943	26 Jan 1944
YUUGURE (ex-USS Richard P. Leary, DD 664)	DD 184	Boston Navy Yard	6 Oct 1943	23 Feb 1944



ARIAKE

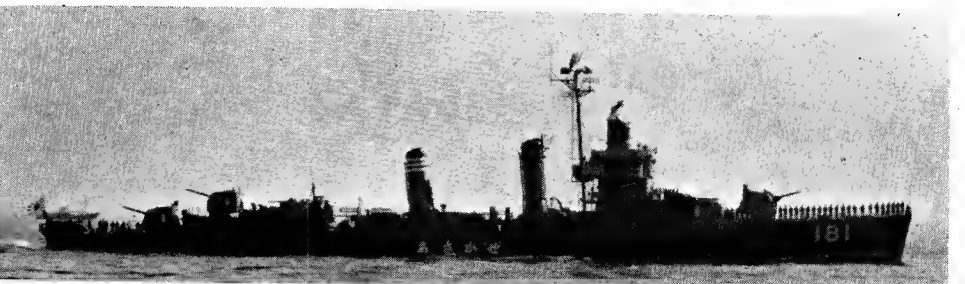
1966, Japanese Maritime Self-Defence Force, Official

CONVERSION. Both ships completed conversion in Mar 1962 with improved bridges, larger combat information centre, newer radar aerials and tripod masts. No. 2

5 inch gun in *Ariake* was replaced by Weapon A.

A photograph of *Yugure* appears in the 1964-65 and 1965-66 editions.

Name	No.	Builders	Laid down	Launched	Completed
ASAKAZE (ex-USS Ellyson)	DD 181	Federal SB & DD Co	2 Dec 1940	25 July 1941	28 Nov 1941
HATAKAZE (ex-USS Macomb)	DD 182	Bath Iron Works Corp	3 Sep 1940	22 Sep 1941	26 Jan 1942



ASAKAZE

1966, Japanese Maritime Self-Defence Force, Official

FRIGATES

Destroyer Escort Type (DE)
4 "River" Class

Displacement, tons	1 490 standard; 1 700 full load
Length, feet (metres)	308.5 (94.0) oa
Beam, feet (metres)	34.2 (10.4)
Draught, feet (metres)	11.5 (3.5)
Guns, dual purpose	4—3 in (76 mm) 50 cal. 2 twin
A/S	1 4-barrelled rocket launcher; 1 DCT; 1 DC rack
Torpedo tubes	4—21 in (533 mm) quadrupled
Torpedo launchers	2 triple for A/S homing torpedoes
Main engines	4 diesels, Mitsui in Oi, Isuzu, Mitsubishi in Kitakami, Mogami; 16 000 hp; 2 shafts
Speed, knots	25
Complement	180

Isuzu and Mogami were built under the 1959 fiscal year new construction programme and Kitakami and Oi were built under the 1961 fiscal year new construction programme.

CLASS VARIATION. The second pair of this type, Kitakami and Oi, have a number of improvements in armament and other equipment and are reported to be of slightly different dimensions.

NOMENCLATURE. All new frigates of the destroyer escort (DE) type are named after rivers, like the old light cruisers. This naming system applied on 1 Oct 1960.

PHOTOGRAPHS. A photograph of Mogami appears in the 1961-62 edition, and of Isuzu in the 1962-63 to 1966-67 editions.

Diesel "B" Type Escort
2 "Thunder" Class

Displacement, tons	1 070 standard; 1 300 full load
Length, feet (metres)	287 (87.5) wl; 288.7 (88.0) oa
Beam, feet (metres)	28.5 (8.7)
Draught, feet (metres)	10.2 (3.1)
Guns, dual purpose	2—3 in (76 mm) 50 cal.
Guns, AA	2—40 mm
A/S	1 Hedgehog; 8 K-guns; 2 DC racks
Main engines	12 000 hp diesels; Mitsubishi in Ikazuchi; Mitsui 8 & W in Inazuma; 2 shafts
Speed, knots	25
Radius, miles	5 500 at 15 knots
Complement	160

Diesel powered "B" type DE Escort Vessels. Authorised by Congress under 1953 fiscal year programme. Unlike the turbine boat, Akebono (see below) which has two funnels, these diesels boat have only one funnel.

NOMENCLATURE. Ikazuchi means "Thunder" and Inazuma means "Thunderbolt".

GUNNERY. The original 2—3 inch guns and 4—40 mm guns were removed in Mar 1959 and replaced by 2—3 inch quick firing guns and 2—40 mm guns.

PHOTOGRAPHS. A dead broadside view of Inazuma appears in the 1961-62 to 1966-67 editions.

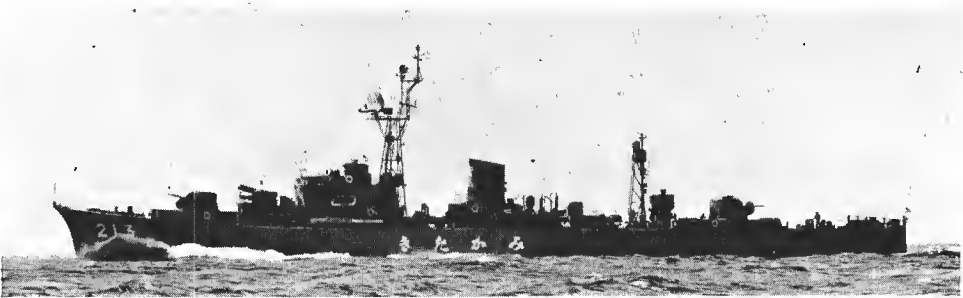
Steam Turbine "B" Type Escort

Displacement, tons	1 060 standard; 1 350 full load
Length, feet (metres)	295 (90.0) oa
Beam, feet (metres)	28.5 (8.7)
Draught, feet (metres)	11 (3.4) max
Guns, AA	2—3 in (76 mm) 50 cal.
Boilers	2 Ishikawajima-Foster Wheeler
Main engines	Ishikawajima geared turbines 18 000 shp; 2 shafts
Speed knots	28
Complement	190

The only steam powered DE. Rated as "8" type Escort Vessel. Built under the 1953 Programme. Ordered on 20 Nov 1954. Akebono means "Dawn".

GUNNERY. The original 2—3 inch guns and 4—40 mm guns were removed in March 1959 when 2—3 inch quick firing guns were mounted.

Name	No.	Builders	Laid down	Launched	Completed
ISUZU	DE 211	Mitsui Zosen Co, Tamano	16 Apr 1960	17 Jan 1961	29 July 1961
KITAKAMI	DE 213	Ishikawajima-Harima Co, Tokyo	7 June 1962	21 June 1963	27 Feb 1964
MOGAMI	DE 212	Mitsubishi Zosen Co, Nagasaki	4 Aug 1960	7 Mar 1961	28 Oct 1961
OI	DE 214	Maizuru (former Iino) Co, Maizuru	10 June 1962	15 June 1963	22 Jan 1964



KITAKAMI

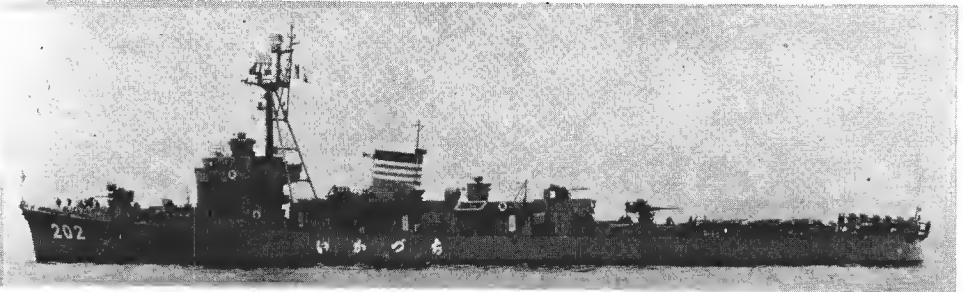
1967, Ishikawajima-Harima Heavy Industries Co, Ltd



OI

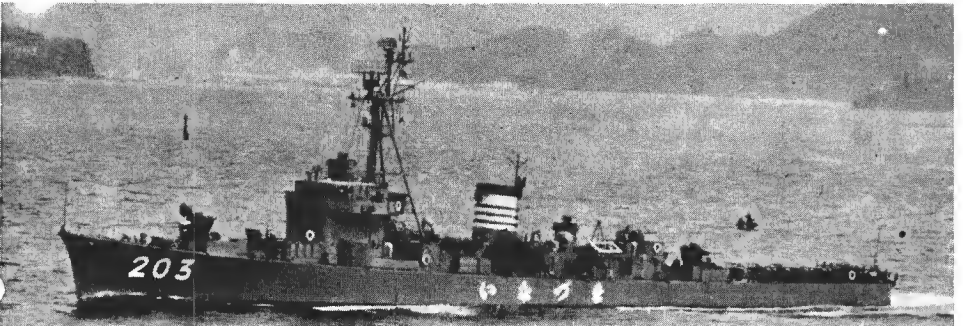
1967, Maizuru Heavy Industries

Name	No.	Builders	Laid down	Launched	Completed
IKAZUCHI	DE 202	Kawasaki Jyuko Co, Kobe	18 Dec 1954	6 Sep 1955	29 May 1956
INAZUMA	DE 203	Mitsui Zosen Co Tamano	25 Dec 1954	4 Aug 1955	5 Mar 1956



IKAZUCHI

1967, Japanese Maritime Self-Defence Force, Official



INAZUMA

1967, Japanese Maritime Self-Defence Force, Official

Name	No.	Builders	Laid down	Launched	Completed
AKEBONO	DE 201	Ishikawajima Jyuko Co, Tokyo	10 Dec 1954	15 Oct 1955	20 Mar 1956



AKEBONO

1967, Japanese Maritime Self-Defence Force, Official

Frigates—continued

Radar Experimental Ship
Former Escort Destroyer

Displacement, tons	1 250 standard; 1 560 full load
Length, feet (metres)	322.2 (98.2) pp 329.8 (100.5) oa
Beam, feet (metres)	31.2 (9.5)
Draught, feet (metres)	10.7 (3.3)
Guns, AA	2—3 in (76 mm) 50 cal. aft
A/S	1 Hedgehog; 4 K-guns; 2 DCT
Boilers	2 Kanpon
Main engines	2 geared turbines; 14 000 shp; 2 shafts
Speed, knots	26 designed; 24 present
Radius, miles	4 680 at 16 knots
Oil fuel (tons)	395
Complement	175

This former escort destroyer, *Nashi*, was built under the War Programme of 1943 as one of the Modified "Matsu" type. She was sunk on 28 July 1945 off Hatajiri Point, Inland Sea, by carrier borne aircraft. She was officially scrapped on 15 Sep 1945, but was subsequently raised and repaired and purchased by the Maritime Self-Defence Force. She completed her first reconstruction at Kure Zosen on 12 May 1956, being renamed and commissioned on 31 May. *Wakaba* means "Young Leaf". She was to be used as a training ship, but was converted into a radar, picket. Her second reconstruction commenced at Uraga Dock Co on 10 Sep 1957 and was completed on 28 Mar 1958. Her lattice foremast and tripod mainmast were

Name	No.	Builders	Laid down	Launched	Completed
WAKABA (ex- <i>Nashi</i>)	DE 261	Kawasaki, Kobe	1 Sep 1944	17 Jan 1945	15 Mar 1945



WAKABA

1967, Japanese Maritime Self-Defence Force, Official

stepped in 1958. In 1961 she had a large radar aerial fitted aft. A port broadside view of *Wakaba* appears in the 1961-62 to 1966-67 editions.

Name	No.
ASAHI (ex-USS <i>Amick</i> , DE 168)	DE 262
HATSUHI (ex-USS <i>Atherton</i> , DE 169)	DE 263

Builders	Laid down	Launched	Completed
Federal Port Newark	30 Nov 1942	27 May 1943	26 July 1943
Federal Port Newark	14 Jan 1943	27 May 1943	29 Aug 1943

U.S. "Bostwick" Type Destroyer Escorts
2 "Sun" Class

Displacement, tons	1 250 standard; 1 510 normal; 1 900 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	36.1 (11.0)
Draught, feet (metres)	12 (3.7) max
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	6—40 mm; 8—20 mm
A/S	8 K-guns; 1 DCT
Main engines	GM diesels, electric drive 6 000 hp; 2 shafts
Speed, knots	20
Complement	220

Taken over from the US Navy on 14 June 1955. *Asahi* means "Morning Sun"; *Hatsuhi* means "First Sun of the Year".

A photograph of *Asahi* appears in the 1961-62 to 1966-67 editions.



HATSUHI

1967, Japanese Maritime Self-Defence Force, Official

U.S. "Tacoma" Type Patrol Frigates
7 "Tree" Class

KAYA (ex-USS <i>San Pedro</i> , PF 37)	P F 288
KEYAKI (ex-USS <i>Evansville</i> , PF 70)	P F 295
KIRI (ex-USS <i>Everett</i> , PF 8)	P F 291
NIRE (ex-USS <i>Sandusky</i> , PF 54)	P F 287
SHII (ex-USS <i>Long Beach</i> , PF 34)	P F 297
SUGI (ex-USS <i>Coronado</i> , PF 38)	P F 285
TSUGE (ex-USS <i>Gloucester</i> , PF 22)	P F 292

Displacement, tons	1 450 standard; 2 415 full load
Length, feet (metres)	285.5 (87.0) wl; 304 (92.7) oa
Beam, feet (metres)	37.5 (11.4)
Draught, feet (metres)	13.7 (4.2) max
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	2—40 mm; 9—20 mm
A/S	1 Hedgehog; 8 K-guns; 2 DC racks.
Boilers	2 three-drum type; 240 psi (16.9 kg/cm ²)
Main engines	Triple expansion 5 500 shp; 2 shafts
Speed, knots	18
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	645
Complement	170

All launched in 1943. Transferred on loan from the United States in 1953. All were technically returned to the US on 28 Aug 1962, but were transferred outright to the Japanese Government the same day and became Japanese ships. Named after trees. *Kaede* and *Keyaki* have a deckhouse added abaft the mainmast.

Ten sister ships, *Buna*, on 1 Feb 1965, *Kashi*, *Moni*, *Tochi* and *Ume* on 1 Apr 1965, and *Kaede*, *Maki*, *Matsu*, *Nara* and *Sakura* on 31 Mar 1966, were reclassified from escort vessels to training ships (moored).

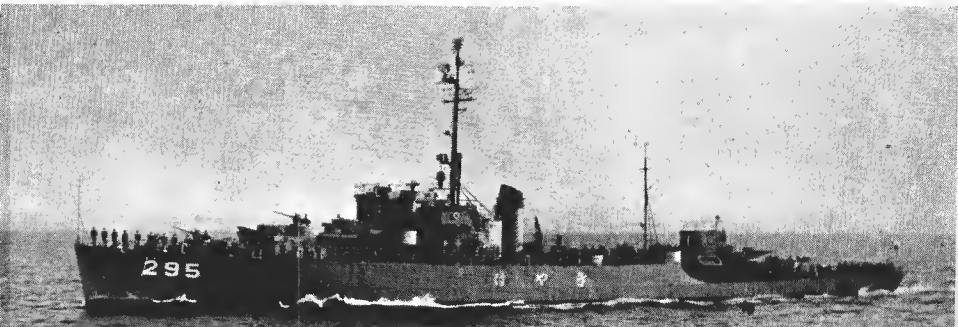
Kusu was converted to Drone Target Carrier in 1964.

Photographs of *Kiri*, *Nora*, *Nire* and *Sugi* appear in the 1953-54 to 1962-63 editions, and a photograph of *Kaya* in the 1963-64 to 1966-67 editions.



SHII

1967, Japanese Maritime Self-Defence Force, Official



KEYAKI (with deckhouse abaft small mainmast)

Added 1966, Eiichi Aoki

FAST PATROL VESSELS

10 "Mizutori" Class Submarine Chasers (PC)

Name	No.	Builders	Laid down	Launched	Completed
MIZUTORI	311	Kawasaki, Kobe	13 Mar 1959	22 Sep 1959	27 Feb 1960
YAMADORI	312	Fujinagata, Osaka	14 Mar 1959	22 Oct 1959	15 Mar 1960
OTORI	313	Kure Shipyard	16 Dec 1959	27 May 1960	13 Oct 1960
KASASAGI	314	Fujinagata, Osaka	18 Dec 1959	31 May 1960	31 Oct 1960
HATSUKARI	315	Sasebo Shipyard	25 Jan 1960	24 June 1960	15 Nov 1960
UMIDORI	316	Sasebo Shipyard	15 Feb 1962	15 Oct 1962	30 Mar 1963
WAKATAKA	317	Kure Shipyard	5 Mar 1962	13 Nov 1962	30 Mar 1963
KUMATAKA	318	Fujinagata, Osaka	20 Mar 1963	21 Oct 1963	25 Mar 1964
SHIRATORI	319	Sasebo Shipyard	29 Feb 1964	8 Oct 1964	27 Feb 1965
HIYODORI	320	Sasebo Shipyard	29 Feb 1965	25 Sep 1965	28 Feb 1966

Displacement, tons 420 to 450 standard
Dimensions, feet 197 x 23.3 x 7.5
Guns 2-40 mm (1 twin)
A/S weapons 1 hedgehog; 1 DC rack; 2 homing torpedo launchers
Main Engines 2 MAN diesels; 2 shafts; 3 800 bhp = 20 knots
Oil fuel (tons) 24.5
Radius, miles 2 000 at 12 knots
Complement 70

Mizutori and Yamadori built under 1958 programme, Otori, Kasasagi and Hatsukari 1959, Umidori (Sea Bird) and Wahataka (Young Hawk) 1961, Kumataka 1962, Shiratori (White Bird) 1963, Hiyodori 1964. A photograph of Otori appears in the 1961-62 to 1966-67 editions.



HIYODORI 1967, Japanese Maritime Self-Defence Force, Official

2 "Umitaka" Class Submarine Chasers (PC)

Name	No.	Builders	Laid down	Launched	Completed
UMITAKA	309	Kawasaki, Kobe	13 Mar 1959	25 July 1959	30 Nov 1959
OTAKA	310	Kure Shipyard	18 Mar 1959	3 Sep 1959	14 Jan 1960

Displacement, tons 440 to 480 standard
Dimensions, feet 197 x 23.3 x 8
Guns 2-40 mm (1 twin)
A/S weapons 1 hedgehog, 1 DC rack; 2 triple A/S torpedo launchers
Main Engines 2 B & W diesels; 2 shafts; 4 000 bhp = 20 knots
Oil fuel (tons) 24
Radius, miles 2 000 at 12 knots
Complement 70

Built under the 1957 programme. Design emphasised good sea-keeping qualities. Otaka means Great Hawk. Umitaka Sea Hawk. A port bow oblique aerial view of Otaka appears in the 1960-61 to 1966-67 editions.



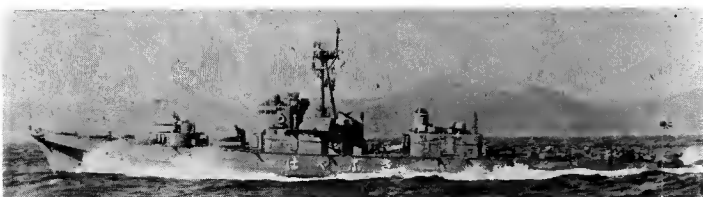
OTAKA 1967, Hajime Fukaya

1 Gas Turbine Type Submarine Chaser (PC)

HAYABUSA 308

Displacement, tons 380 standard
Dimensions, feet 190.2 x 25.7 x 7
Guns 2-40 mm AA (1 twin)
A/S weapons 1 Hedgehog; 2 DC throwers; 2 DC racks
Main engines 1 Gas turbine 5,000 hp; 2 diesels 4,000 bhp; 3 shafts
Total 9 000 hp = 26 knots
Complement 75

Built under the 1954 fiscal year programme by Mitsubishi Shipbuilding & Engineering Co Ltd, Nagasaki. Laid down on 23 May 1956. Launched on 20 Nov 1956. Completed on 10 June 1957. The gas turbine was installed in Mar 1962.



HAYABUSA 1967, Japanese Maritime Self-Defence Force, Official

Fast Patrol Vessels—continued

7 Diesel Type Submarine Chasers (PC)

Name	No.	Builders	Laid down	Launched	Completed
KAMOME	305	Uraga	27 Jan 1956	3 Sep 1956	14 Jan 1957
KARI	301	Fujimagata, Osaka	18 Jan 1956	26 Sep 1956	8 Feb 1957
KIJI	302	Iino, Maizuru	14 Dec 1955	11 Sep 1956	29 Jan 1957
MISAGO	307	Uraga	27 Jan 1956	1 Nov 1956	11 Feb 1957
TAKA	303	Fujimagata, Osaka	18 Jan 1956	17 Nov 1956	11 Mar 1957
TSUBAME	306	Kure Shipyard	15 Mar 1956	10 Oct 1956	31 Jan 1957
WASHI	304	Iino, Maizuru	14 Dec 1955	12 Nov 1956	20 Mar 1957

Displacement, tons 330 standard; (Kari, Kiji, Taka, Washi, 310)
Dimensions, feet 173.3 oa x 21.8 x 6.8
Guns 2-40 mm (1 twin)
A/S weapons 1 hedgehog; 2-Y guns; 2 DC racks
Main Engines 2 diesels (Kari, Kiji, Taka and Washi, Kawasaki-MAN; others Mitsui-Burmeister & Wain). 2 shafts; 4 000 bhp = 20 knots
Oil fuel (tons) 21.5
Radius, miles 2,000 at 12 knots
Complement 70

Authorised under the 1954 programme. At the time they were an entirely new type of fast patrol vessels or submarine chasers, reminiscent of the United States PC type but modified and improved in many ways. Kamome means "Seagull". A photograph of Kamome appears in the 1957-58 to 1965-66 editions



MISAGO 1966, Japanese Maritime Self-Defence Force, Official

MINELAYERS

Minelayer and Cable Layer (ARC)

TSUGARU 481

Displacement, tons 950 standard
Dimensions, feet 216.3 x 34.1 x 11
Guns 1-3 in, 50 cal dp; 2-20 mm AA;
A/S weapons 4 K-guns (DC mortars)
Mines 4 mine launchers, capacity of 40 mines
Main Engines Diesel; 2 shafts; 3 200 bhp = 16 knots
Complement 100

Dual purpose cable layer and coastal minelayer. Built under the 1953 programme by Yokohama Shipyard & Engine Works, Mitsubishi Nippon-Heavy Industries Ltd. Laid down on 18 Dec 1954. Launched on 19 July 1955. Completed on 15 Dec 1955.



TSUGARU 1966, Japanese Maritime Self-Defence Force, Official

Minelayer and Minesweeper (AMC)

ERIMO 491

Displacement, tons 630 standard
Dimensions, feet 210 x 26 x 8
Guns 2-40 mm AA; 2-20 mm AA
A/S weapons 1 hedgehog; 2 K-guns; 2 DC racks
Main Engines Diesel; 2 shafts; 2 500 bhp = 18 knots
Complement 80

Multi-purpose minelayer, ocean minesweeper (non-magnetic) and submarine chaser. Authorised under 1953 fiscal programme. Built by Uraga Dock Co. Laid down on 10 Dec 1954. Launched on 12 July 1955. Completed on 28 Dec 1955.



ERIMO 1966, Japanese Maritime Self-Defence Force, Official

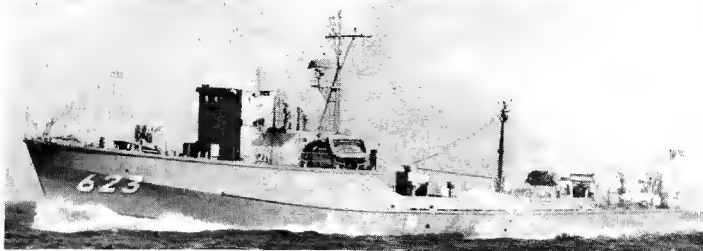
COASTAL MINESWEEPERS

21 "Kasado" Class

Name	No.	Laid down	Launched	Completed
KASADO	MSC 604	9 July 1956	19 Mar 1958	26 June 1968
SHISAKA	MSC 605	20 July 1956	20 Mar 1958	16 Aug 1958
KANAWA	MSC 606	25 Aug 1958	22 Apr 1959	24 July 1959
SAKITO	MSC 607	16 Aug 1958	22 Apr 1959	25 Aug 1959
HABUSHI	MAC 608	24 Mar 1959	19 June 1959	22 Sep 1959
KOOZU	MSC 609	30 Mar 1959	12 Nov 1959	26 Feb 1960
TATARA	MSC 610	25 Aug 1958	14 Jan 1960	26 Mar 1960
TSUKUMI	MSC 611	24 Mar 1959	12 Jan 1960	27 Apr 1960
MIKURA	MSC 612	30 Mar 1959	14 Mar 1960	27 May 1960
SHIKINE	MSC 613	12 Jan 1960	22 July 1960	15 Nov 1960
HIRADO	MSC 614	14 Mar 1960	3 Oct 1960	17 Dec 1960
KOSHIKI	MSC 615	20 Mar 1961	9 Nov 1961	29 Jan 1962
HOTAKA	MSC 616	22 Mar 1961	23 Oct 1961	24 Feb 1962
KARATO	MSC 617	15 Mar 1962	11 Dec 1962	23 Mar 1963
HARIO	MSC 618	19 Mar 1962	10 Dec 1962	27 Mar 1963
MUTSURE	MSC 619	28 Mar 1963	16 Dec 1963	24 Mar 1964
CHIBURI	MSC 620	27 Mar 1963	29 Nov 1963	25 Mar 1964
OOTSU	MSC 621	25 Mar 1964	5 Nov 1964	24 Feb 1965
KUDAKO	MSC 622	17 Mar 1964	8 Dec 1964	24 Mar 1965
RISHIRI	MSC 623	9 Mar 1964	22 Nov 1965	5 Mar 1966
REBUN	MSC 624	27 Mar 1965	7 Dec 1965	25 Mar 1966
AMAMI	MSC 625	1 Mar 1966	31 Oct 1966	1967
URUME	MSC 625	1 Feb 1966	12 Nov 1966	1967
MINASE	MSC 627	1 Feb 1966	10 Jan 1967	1967

Displacement, tons 340
Dimensions, feet 151 x 27.5 x 17.5
Guns 1—20 mm AA
Main Engines 2 diesels; 2 shafts; 1 200 bhp = 14 knots

Hull is of wooden construction. Otherwise built of non-magnetic materials. *Habushi*, *Kanawa* and *Kasado* were built by Hitachi, Kanawaga Works, *Shishaka* and *Sakito* by Nippon Steel Tube Co, Tsurumi. *Kasado* and *Shisaka* were ordered under the 1955 programme, *Habushi*, *Kanawa* and *Sakito* 1957, four 1958, two 1959, two 1960, two 1961, two 1962, two 1963, two 1964, three 1965. A photograph of *Shisaka* appears in the 1961-62 to 1966-67 editions.



RISHIRI 1967, Japanese Maritime Self-Defence Force, Official

YASHIRO MSC 603

Displacement, tons 230 standard; 255 full load
Dimensions, feet 118 pp x 22.7 x 6.2
Guns 1—20 mm AA
Main Engines Diesel; 2 shafts; 1 200 bhp = 13 knots

Built under the 1953 Programme by the Nippon Kokan Co, Tsurumi. Laid down on 22 June 1955, launched on 26 Mar 1956 and completed on 10 July 1956.



YASHIRO 1967, Japanese Maritime Self-Defence Force, Official

2 "Atada" Class

Name	No.	Laid down	Launched	Completed
ATADA	MSC 601	20 June 1955	12 Mar 1956	30 Apr 1956
ITSUKI	MSC 602	22 June 1955	12 Mar 1956	20 June 1956

Displacement, tons 240 standard; 260 full load
Dimensions, feet 118 pp; 123.3 oa x 21 x 6.8
Guns 1—20 mm AA
Main Engines Diesel; 2 shafts; 1 200 bhp = 13 knots

Of wood and light metal construction. Authorised under the 1953 fiscal year programme. Built by the Hitachi Zosen Co. Named after small islands. A photograph of *Itsuki* appears in the 1960-61 to 1966-67 editions.



ATADA 1967, Japanese Maritime Self-Defence Force, Official

Coastal Minesweepers—continued

4 "Yashima" Class

HASHIMA (ex-USS *AMS* 95) **TSUSHIMA** (ex-USS *MSC*, ex-*AMS* 255)
TOSHIMA (ex-USS *MSC* 258) **YASHIMA** (ex-USS *AMS* 144)

Displacement, tons 335 standard; 375 full load
Dimensions, feet 138 pp; 144 oa x 26.5 x 8.3
Guns 1—20 mm AA
Main engines 2 GM diesels; 880 bhp = 13 knots

Former US auxiliary minesweepers of non-magnetic construction. Transferred on 3 June 1955 (*Hashima*, *MSC* 652), 1 Feb 1957 (*Toshima*, *MSC* 654), 18 July 1956 (*Tsushima*, *MSC* 652), and 16 Dec 1954 (*Yashima*, *MSC* 651). A photograph of *Yashima* appears in the 1961-62 to 1965-66 editions.



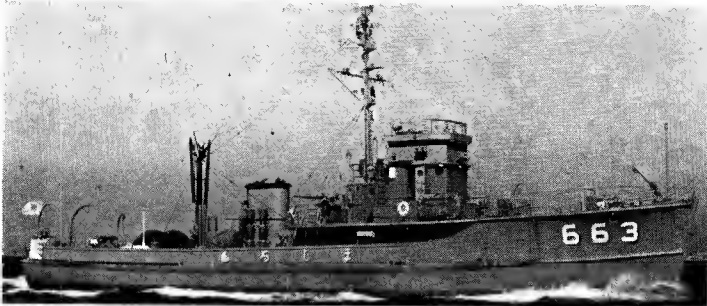
TOSHIMA 1966, Japanese Maritime Self-Defence Force, Official

7 "Ujishima" Class

MOROSHIMA (ex-USS *Hummer*, *MSC(o)* 20) **OGISHIMA** (ex-USS *Pelican*, *AMS* 32)
YAKUSHIMA (ex-USS *Osprey*, *AMS* 28)
NINOSHIMA (ex-USS *Lark*, *MSC(o)* 23) **YUGESHIMA** (ex-USS *Swallow*, *AMS* 36)
NUWAJIMA (ex-USS *Heron*, *AMS* 18) **YURISHIMA** (ex-USS *Chatterer*, *AMS* 40)

Displacement, tons 310 standard; 350 full load
Dimensions 136 x 24.5 x 8 max
Guns 1—40 mm AA; 2—20 mm AA
Main engines 2 GM diesels; 1 000 bhp = 12 knots

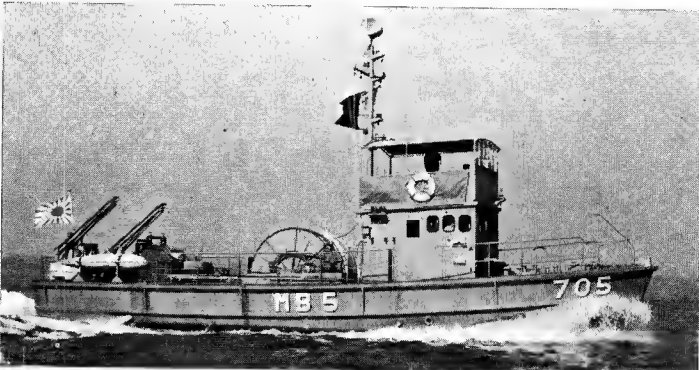
Former US "Albatross" class of wooden construction, formerly auxiliary motor minesweepers (*AMS*) but reclassified as Minesweepers, Coastal (old) or *MSC(o)* in Feb 1955. *Moroshima* and *Ninoshima* were transferred to Japan on 16 Mar 1959, remainder in 1955. All named after small islands around the Japanese homeland. Nos 663, 662, 657, 659, 658, 660 and 661 respectively. *Yakushima* is used for training. The remainder are out of commission. Sister ships *Etajima* and *Ujishima* were officially deleted from the list in 1966.



MOROSHIMA 1961
MINESWEEPING BOATS (*Sookaitei*)

No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Displacement, tons	40				
Dimensions, feet	57.2 wl; 62.3 oa x 16 x 4				
Main Engines	Diesels; 2 shafts; 320 bhp = 10 knots				
Complement	10				

Nos. 1, 2 and 3 were launched in Jan and Feb 1957 and completed in Mar and Apr 1957. No. 4 was launched in Apr 1957 and completed in June 1957. Nos. 5 and 6 were laid down in Aug 1958 and completed in Feb-Mar 1959. Nos. 1 and 2 were built by Hitachi, Kanagawa, and the others by Nihon Kohan, Tsurumi. Named *Sokaitei*. Nos. 1 to 6 and numbered *MSB* 701 to 706.



MB 5 1963, Official

MOTOR TORPEDO BOATS (Gyoraitei)

PT 10

Displacement, tons 90 standard; 120 full load
Dimensions, feet 105 × 27·8 × 3·7
Guns 2—40 mm AA (1 forward, 1 aft)
Tubes 4—21 in (single, amidships)
Main Engines 3 Napier Deltic diesels; 9 400 bhp = 40 knots
Complement 26

1960 programme. Built by Mitsubishi, Shimonoseki. Laid down on 30 Jan 1961. Launched on 28 July 1961. Completed on 25 May 1962. Light metal hull.



PT 10 1964, Mitsubishi Shipbuilding & Engineering Co Ltd.

PT9

Displacement, tons 55
Dimensions, feet 71·3 × 19·8 × 6
Tubes 2—21 in
Main Engines 2 Napier Deltic diesels; 5 000 bhp = 40 knots
Complement 14

Basically similar to the British "Dark" class MTBs. Built by Saunders-Roe (Anglesey) Ltd, Beaumaris. Delivered to Yokosuka Naval Base on 29 July 1957. Accepted into service on 2 Sep 1957. Has mounting for 1—40 mm AA (gun not fitted).

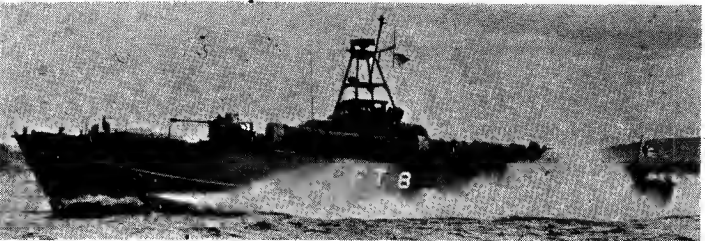


PT 9 Saunders-Roe (Anglesey) Ltd

PT 7

Displacement, tons 100
Dimensions, feet 112 × 24·7 × 4
Guns 2—40 mm AA
Tubes 4—21 in
Main Engines 3 Mitsubishi diesels; 3 shafts; 6 000 bhp = 33 knots
Complement 30

Authorised in the 1954 fiscal year. Built by Mitsubishi Zosen Co, Shimonoseki Works. 80th laid down on 23 Aug 1956, launched on 2 Feb and 20 July 1957, respectively, and completed on 19 Dec 1957 and 10 Jan 1958. Light metal hulls.

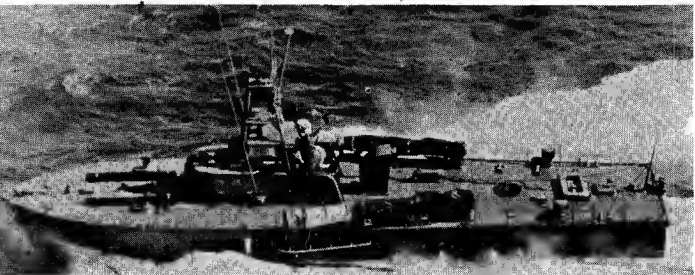


PT 8 1966, Japanese Maritime Self-Defence Force, Official

PT 1 PT 2 PT 3 PT 4 PT 5 PT 6

Displacement, tons 75 (Nos 3 and 4: 70)
Dimensions, feet 82 × 20 × 6
Guns 1—40 mm AA
Tubes 2—21 in torpedo launchers
Main Engines 2 diesel engines; 4 000 bhp = 31 knots
Complement 18

Authorised under the 1953 fiscal year programme. Nos. 1 and 2 have wooden hulls, Nos. 5 and 6 have steel hulls, and Nos. 3 and 4 have light metal hulls. Builders: Azuma Zosen Co (Nos 5 and 6), Hitachi Zosen Co (Nos. 1 and 2), and Mitsubishi Zosen Co (Nos. 3 and 4). Numbers 801 to 809 were assigned on 1 Sep 1957



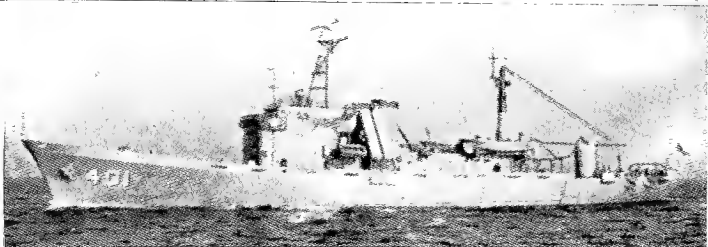
PT 1 Hitachi Shipbuilding Co

SUBMARINE RESCUE VESSEL (ASR)

CHIHAYA ASR 401

Displacement, tons 1 340 standard
Dimensions, feet 239·5 × 39·3 × 12·7
Main Engines Diesels; 2 700 bhp = 15 knots
Complement 90

Authorised under the 1959 fiscal year programme. The first vessel of her kind to be built in Japan. Laid down on 15 Mar 1960. Launched by Mitsubishi Nippon Heavy Industries Co, Yokohama on 4 Oct 1960. Completed on 15 Mar 1961. Has rescue chamber, decompression chamber, and four-point mooring equipment.



CHIHAYA 1961, Japanese Maritime Self-Defence Force, Official

DRONE TARGET CARRIER

Former U.S. "Tacoma" Type Patrol Frigate

KUSU (ex-USS Ogden, PF 39) PF 281

Displacement, tons 1 450 standard; 2 415 full load
Dimensions, feet 285·5 wl, 304 oa × 37·5 × 13·7 max
Guns, AA 2—40 mm; 6—20 mm
A/S weapons 1 Hedgehog
Main engines Triple expansion; 2 shafts; 5 500 ihp = 18 knots
Boilers 2 three-drum type; 240 psi
Oil fuel, tons 645
Radius 9 500 miles at 12 knots
Complement 170

Former frigate of the "Tree" class, see earlier page. Converted to a Drone Target Carrier in 1964.

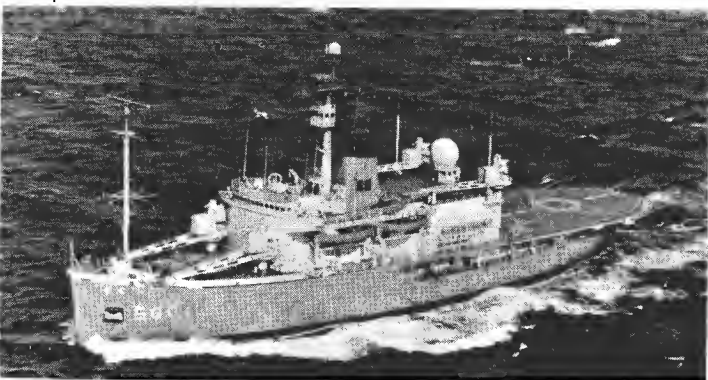
DISPOSAL. The drone target carrier *Hamagiku* (ex-415, ex-USS LSSL 87), former American landing ship support, large, was deleted from the list in 1967.

ICEBREAKER (AGB)

FUJI 5001

Displacement, tons 5 250 standard; 7 760 normal; 8 566 full load
Dimensions, feet 328 × 72·2 × 29
Aircraft 3 helicopters
Main engines 4 diesel-electric; 2 shafts; 12 000 shp = 16 knots
Radius, miles 5 000 at 15 knots
Complement 200 plus 35 scientists and observers

Icebreaker and Antarctic Support Ship. Built by Tsurumi Shipyard, Yokohama, Nippon Kokan Kaishiki Kaisha. Laid down on 28 Aug 1964, launched on 18 Mar 1965 and delivered on 15 July 1965. Equipped with hangar and flight deck aft. Named after the mountain.



FUJI 1966, Japanese Maritime Self-Defence Force, Official

SALVAGE VESSEL

SHOBO 41

Displacement, tons 45
Dimensions, feet 75 × 18 × 3·3
Main engines 4 diesels; Speed = 19 knots

A new fire defence boat. Built by Azuma Zosen, Yokosuka. Completed 28 Feb 1964.

PATROL BOATS

SHOOKAI 1, 2, 3, 4, 5, 6, 7 SHOOKAI 11, 12, 13, 14, 15, 16, 17

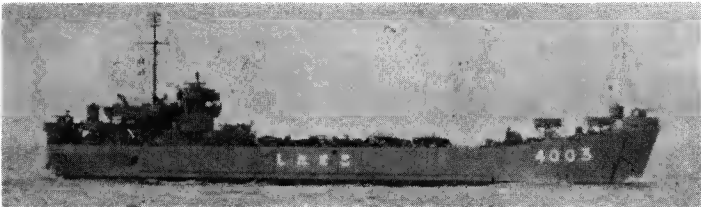
Displacement, tons 18
Dimensions, feet 45·5 × 13·7 × 3·2
Main Engines 2 diesels; 450 bhp = 16 knots

These vessels were transferred to Japan under the MAP programme in 1958.

TANK LANDING SHIPS

OOSUMI 4001	SHIMOKITA 4002	SHIRETOKO 4003
Displacement, tons	1 650 standard; 4 080 full load	
Dimensions, feet	316 wl; 348 oa x 50 x 14	
Guns	7—40 mm AA; 2—20 mm AA	
Main engines	GM diesels; 2 shafts; 1 700 bhp = 11 knots	
Complement	70	

Former US tank landing ships *Daggett County*, LST 689, *Hillsdale County*, LST 835, and *Nansemond County*, LST 1064, built by Jeffersonville B. & M. Co, Jeffersonville, Ind.; American Bridge Co, Ambridge, Pa; and Bethlehem Steel Co, Hingham, Mass, respectively, in 1944-45. Transferred from USA and commissioned in the Japanese MSDF on 1 Apr 1961. Named after homeland peninsulars. A photograph of *Oosumi* appears in the 1962-63 to 1966-67 editions.



SHIRETOKO 1967, Japanese Maritime Self-Defence Force, Official

MEDIUM LANDING SHIP

SM 3001 (ex-French LSM 9013, ex-USS LSM 125)	
Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa x 34.5 x 5.2 beaching; (8.5 max)
Guns	2—40 mm AA; 6—20 mm AA
Main Engines	Diesels; 2 shafts; 2 800 bhp = 12 knots
Complement	50

Transferred from the US Navy to the French Navy in 1954 for use in Indo-China. She was returned by the French in 1957 to the US Navy, and then transferred to the Japanese in 1958.



LSM 3001 1966, Japanese Maritime Self-Defence Force, Official

LANDING CRAFT

LCU 2001	LCU 2002	LCU 2003	LCU 2004	LCU 2005	LCU 2006
Displacement, tons		187			
Former US Navy LCU 1602, 1603, 1604, 1605, 1606 and 1607 transferred under MAP					
42 Ex-U.S. LCM Type					

LCM 1001—1042	
Displacement, tons	22
55 landing craft comprising 6 LCUs of 187 tons, 29 LCMs of 22 tons and 20 LCVPs of 8 tons were transferred from the United States on 2 June 1955. 13 LCMs, Nos 1030—1042, were transferred from the United States under MAP in 1961.	

HIGH SPEED BOATS (Kosoku)

KOOSOKU 4	KOOSOKU 5
Displacement, tons	26
Dimensions, feet	75.5 x 18 x 2.5
Main Engines	2 Packard engines; 3 000 bhp = 40 knots

Of aluminium construction. Laid down on 10 Oct 1958 and 11 Dec 1958 at Mitsubishi, Shimonoseki Works under the 1957 and 1958 Programme, launched on 11 Dec 1958 and 2 Mar 1959, and completed on 11 May 1959 and 12 June 1959, respectively. Pennant Nos. ASH 04 and 05.

KOOSOKU 1	KOOSOKU 2	KOOSOKU 3
Displacement, tons	30	
Dimensions, feet	65.7 x 17 x 2.7	
Main Engines	2 Packard petrol engines; 3 000 bhp = 42 knots	

ASH category. Of wooden construction. Former names of Kosoku 1 and 2 were YS 03, YS 04 as service craft. All are Maritime Self-Defence Force auxiliaries.

KOOSOKU 29	
Displacement, tons	46
Dimensions, feet	85.3 × 20.3 × 4.5
Main Engines	2 Packard engines; 3 000 bhp = 34 knots

KOOSOKU 11, 12	KOOSOKU 21, 22, 23, 24, 25, 26, 27, 28, 30
Displacement, tons	30
Dimensions, feet	63.2 x 15.2 x 6
Main Engines	2 petrol engines; 1 200 bhp = 33.5 knots

ASH 11, 12 and 21-26 transferred under MAP in 1958-59, 27-30 in 1961-62.

MINESWEEPER TENDERS (MST)

HAYATOMO (ex-USS <i>Hamilton County</i> , LST 802) MST 461	
Displacement, tons	1 650 standard; 4 080 full load
Dimensions, feet	316 wl, 328 oa x 50 x 14
Guns	7—40 mm AA; 2—20 mm AA (original armament)
Main engines	GM diesels; 2 shafts; 1 700 bhp = 11 knots
Complement	70

Former US tank landing ship. Built by Jeffersonville B. & M. Co, Jeffersonville, Ind. Laid down on 2 Sep 1944, launched on 19 Oct 1944 and completed on 13 Nov 1944. Purchased from the US Navy on 30 June 1960. Rated as MSC Tender.



HAYATOMO 1963, Tatuo Kamino

2 "Miho" Class

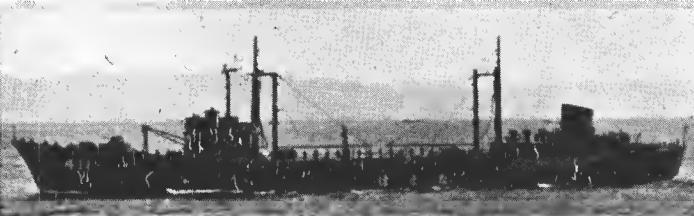
MIHO (ex-USS FS 524)	NASAMI (ex-USS FS 408)
Displacement, tons	706
Dimensions, feet	177 x 30 x 10
Main Engines	Diesels; 2 shafts; 1 000 bhp = 11 knots

Transferred from the United States in 1955. *Nasami* is rated as a minesweeper tender (MST), *Miho*, formerly rated as ASS, was refitted as an inshore minesweeper depot ship in August 1959. A photograph of *Nasami* appears in the 1957-58 edition.

OILERS (AO)

HAMANA	
Displacement, tons	2 900 light; 7 550 full load
Dimensions, feet	420 × 51.5 × 20.5
Guns	2—40 mm AA
Main Engines	Diesel; 5 000 bhp = 16 knots

Built by Uraga Dock Co under the 1960 programme. Laid down on 17 Apr 1961, launched on 24 Oct 1961, and completed on 10 Mar 1962. Named after the lake.



HAMANA 1966, Japanese Maritime Self-Defence Force, Official

YO-07	
Displacement, tons	213 light ; 711 full load
Main Engines	2 sets diesels ; 2 shafts ; 400 bhp = 9 knots

Built by Hayashikane SB & Eng Co, Shimonoseki. Completed on 28 Feb 1963.

WATER CARRIER

YW 10
Auxiliary and yard water supply ship of 178 tons completed on 11 Mar 1963

TUGS

YT-35	
Displacement, tons	100 normal
Main Engines	2 sets diesels; 2 shafts; 400 bhp = 9 knots

Built by Hayashikane SB & Eng Co. Completed on 28 Feb 1963. Harbour tug.

TOBA	
Displacement, tons	390
Dimensions, feet	126.7 x 28 x 12
Main Engines	1 diesel; 1 200 bhp = 11 knots

AST category. Of wooden construction. Former name was LT 392.

SUMA	
Displacement, tons	115
Dimensions, feet	70.5 x 19 x 5
Main Engines	1 diesel; 600 bhp = 12 knots
ATR category. Steel construction. Former name YLT 749. The small harbour tugs YLT 162, 167, 203, 244, 748, 749 and 750 were transferred by the USA.	

MARITIME SAFETY AGENCY

Established in May 1948.

Personnel 1967: 11,500.

LARGE PATROL VESSELS

ERIMO PL 13

Displacement, tons 1 009 normal (official figures)
Dimensions, feet 239.5 wl × 30.2 × 9.9
Guns 1—3 in, 50 cal; 1—20 mm AA
Main Engines Diesels; 2 shafts; 4 800 bhp = 19.78 knots

Both built by Hitachi Zosen Co Ltd. *Erimo* was laid down on 29 Mar 1965, launched on 14 Aug 1965 and completed on 30 Nov 1965. Her structure is strengthened against ice. Employed as a patrol vessel off northern Japan. *Satsuma*, completed on 30 July 1966, is assigned to guard and rescue south of Japan; she is not particularly strengthened against ice.

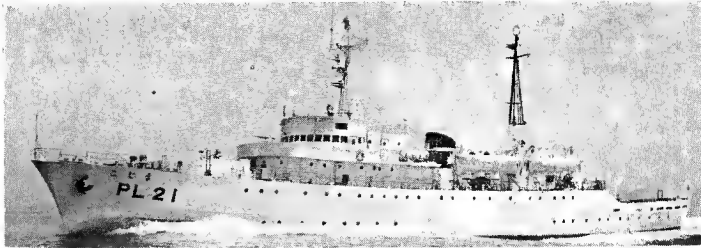


ERIMO 1966, Japanese Maritime Safety Agency, Official

KOJIMA PL 21

Displacement, tons 1 100
Dimensions, feet 228.3 × 33.8 × 10.5
Guns 1—3 in; 1—40 mm AA; 1—20 mm AA
Main Engines Diesels; 2 600 hp = 17 knots
Complement 17 officers, 42 men, 47 cadets

Maritime Safety Agency training ship. Completed on 21 May 1964 at Kure Zosen.



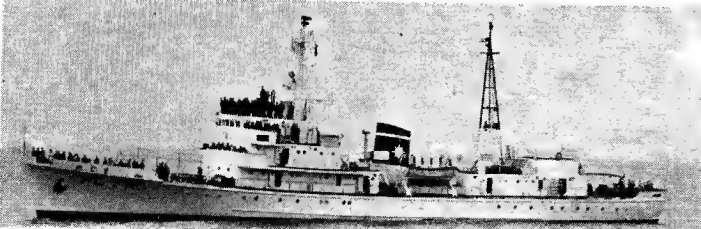
KOJIMA 1965, Japanese Maritime Safety Agency, Official

2 "Nojima" Class

NOJIMA PL 11

Displacement, tons 950 standard; 980 normal; 1 100 full load
Dimensions, feet 208.8 pp; 226.5 oa × 30.2 × 10.5
Main Engines 2 sets diesels; 3 000 bhp = 17.5 knots
Complement 51

Nojima was built by Uruga Dock Co Ltd. Laid down on 27 Oct 1961, launched on 12 Feb 1962, and completed on 30 Apr 1962. *Ojika* was completed on 10 June 1963. Both employed as patrol vessels and weather ships.



NOJIMA

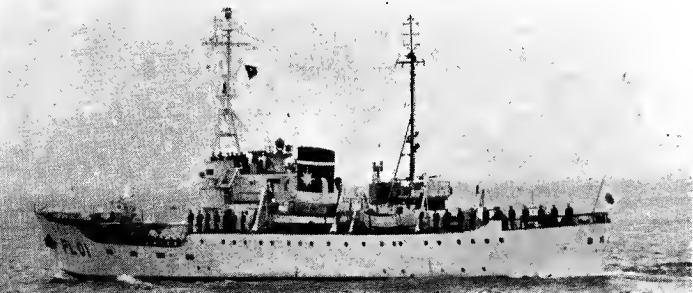
1966, Eiichi Aoki

2 "Muroto" Class

DAIO PL 02

Displacement, tons 750 standard; 840 normal
Dimensions, feet 182 pp; 200 oa × 30.5 × 10.2
Guns 1—3 in, 50 cal; 2—20 mm AA
Main engines 2—4 cycle single acting diesels; 1 500 bhp = 15.37 knots

Muroto, built by Uruga Dock Company Ltd, Tokyo, was laid down on 16 Aug 1949, launched on 5 Dec 1949, and delivered on 20 Mar 1950. Vertical tubular donkey boiler, three generators, wireless, radar, direction finder, echo-sounder, streamlined bridge wings.



MUROTO

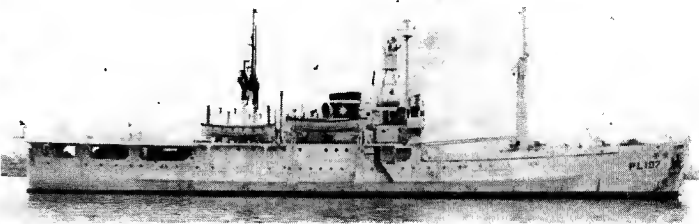
1966, Eiichi Aoki

SATSUMA PL 14

SOYA PL 107

Displacement, tons 4 364 normal; 4 818 full load
Dimensions, feet 259.2 wl × 51.9 (including bulge) × 18.9
Aircraft 4 helicopters (see Notes)
Main Engines 2 sets diesels; 4 800 bhp = 12.5 knots on trials
Radius, miles 16 400 at 11 knots
Complement 96

Originally a Lighthouse Supply Ship and Navigational Aid Vessel (LL) but converted by Asano Dockyard of Nippon Steel Tube Co Ltd into a South Pole Research Ship. Her first conversion, begun on 12 Mar 1956 was completed on 10 Oct. 1956. The second conversion, begun on 1 July 1957, was completed on 30 Sep 1957. The third conversion was completed on 5 Oct 1958. She carried two Sikorsky S—58 helicopters and two Bell 47G-2 helicopters on a flight platform laid on the quarter deck for exploration and surveying in the Antarctic. She was designed for breaking ice more than 4 feet thick. Upon completion of her Antarctic research mission in 1963 she was assigned to guard and rescue service as a patrol vessel.



SOYA

1959, Japanese Maritime Safety Agency, Official

DISPOSALS

Of the five former frigates of the "Ukuru" class, *Atsumi* (ex-*Chikabu*) PL 103 was officially deleted from the list in 1962. *Ojika* (ex-*Ikuna*) PL 102 in 1963, *Kojima* (ex-*Shiga*) PL 106 in 1964, and *Satsuma* (ex-*Ukuru*) PL 104 and *Tsugara* (ex-*Shinnan*) PL 105 in 1966. The large patrol vessel *Miura* PL 101 was officially deleted from the MSA vessel list in May 1967.

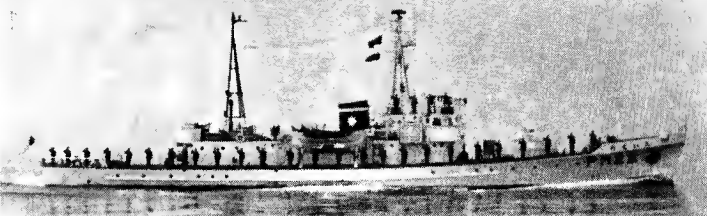
MEDIUM PATROL VESSELS

5 "Chifuri" Class

CHIFURI PM 13 KOZU PM 20 DAITO PM 22
KUROKAMI PM 15 SHIKINE PM 21

Displacement, tons 465 standard; 483 normal
Dimensions, feet 169 pp; 177 wl × 25.2 × 8.5 (normal)
Guns 1—3 in 50 cal; 1—20 mm AA
Main engines 2 sets diesels; 1 300 bhp = 15.8 knots
Radius, miles 4 400 at 12 knots

An improved version of the "Rebun" class design. All completed in 1952. A photograph of *Chifuri* appears in the 1962-63 to 1965-66 editions.



DAITO

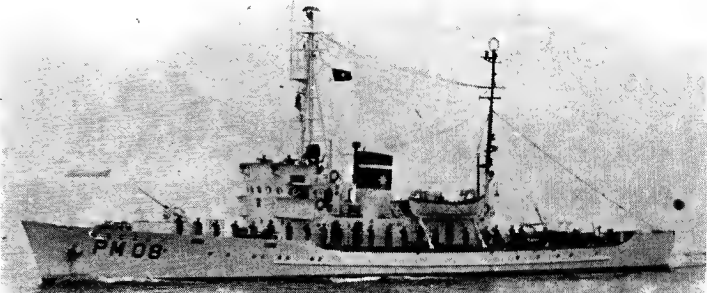
1966, Eiichi Aoki

14 "Rebun" Class

REBUN PM 04 HACHIJO PM 08 NOTO PM 13
IKI PM 05 AMAKUSA PM 09 HEKURA PM 14
OKI PM 06 OKUSHIRI PM 10 MIKURA PM 15
GENKAI PM 07 KUSAKAKI PM 11 KOSHIKI PM 16
RISHIRI PM 12 HIRADO PM 17

Displacement, tons 450 standard; 488 trials; 495 normal
Dimensions, feet 155.2 pp; 164 wl; 170 oa × 26.5 × 8.5
Guns 1—3 in 50 cal; 1—20 mm AA
Main engines 2 sets diesels; 1 300 bhp = 15 knots
Radius, miles 3 000 at 12 knots

A development of the original "Awaji" class design. All completed in 1951. A photograph of *Mikura* appears in the 1961-62 to 1964-65 editions, and of *Genkai* in the 1963-64 to 1965-66 editions.



HACHIJO

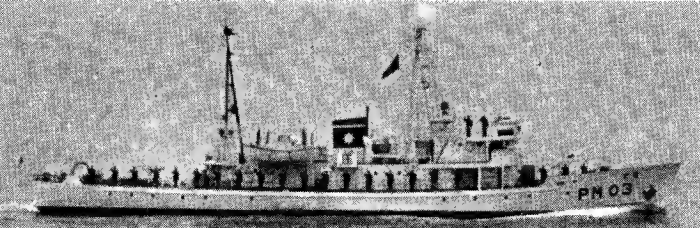
1966, Official

Medium Patrol Vessels—continued

3 “Awaji” Class

AWAJI PM 01	MIYAKE PM 02	SADO PM 03
Displacement, tons	510 standard; 550 normal	
Dimensions, feet	172 oa × 26·7 × 9·2	
Guns	1—3 in 50 cal; 1—20 mm AA	
Main engines	2 sets diesels; 1 300 bhp = 15 knots	
Radius, miles	3 000 at 12 knots	

Of a design resembling United States Coast Guard Cutters. All completed in 1950. A photograph of *Awaji* appears in the 1962-63 and 1963-64 editions.



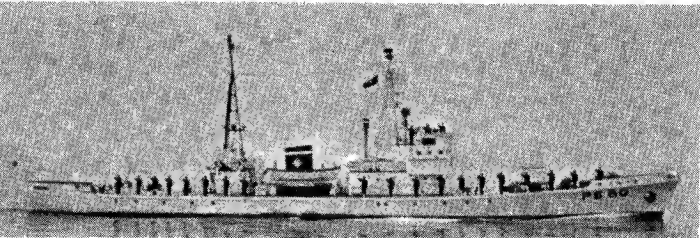
SADO 1966, Eiichi Aoki

SMALL PATROL VESSELS

5 “Matsuura” Class

AMAMI PS 62	MATSUURA PS 60	SENDAI PS 61
KARATSU PS 64	NATORI PS 63	
Displacement, tons	420 standard; 425 normal	
Dimensions, feet	163·3 pp; 181·5 oa × 23 × 7·5	
Guns	1—20 mm AA	
Main engines	2 sets diesels; 1 400 bhp = 16·5 knots (<i>Matsuura</i> , <i>Sendai</i>); 1 800 bhp = 16·8 knots (<i>Amami</i> , <i>Natori</i>); 2 600 bhp (<i>Karatsu</i>)	
Radius, miles	3 500 at 13 knots	
Complement	37	

Matsuura and *Sendai* were built by Osaka Shipbuilding Co Ltd. *Matsuura* was laid down on 16 Oct 1960, launched on 24 Dec 1960 and completed on 18 Mar 1961. *Sendai* was laid down on 23 Aug 1961, launched on 18 Jan 1962 and completed on 21 Apr 1962. *Amami*, completed on 29 Mar 1965, *Natori*, completed in 1966, and *Karatsu*, delivered to MSA on 31 Mar 1967, were built by Hitachi Zosen Co Ltd.



MATSUURA 1966, Eiichi Aoki

1 “Teshio” Class

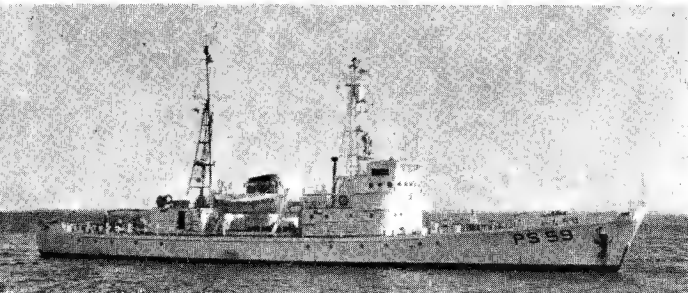
TESHIO PS 53	
Displacement, tons	421·5 normal
Dimensions, feet	149·4 pp; 159 wl × 23 × 8·2
Guns	1—40 mm AA
Main engines	2 sets diesels; 1 400 bhp = 15·71 knots
Radius, miles	3 690 at 12 knots
Complement	37

Built by Uraga Dock Co Ltd. Laid down on 15 Sep 1954, launched on 12 Jan 1955 and completed on 19 Mar 1955. A photograph of *Teshio* appears in the 1962-63 to 1965-66 editions.

6 “Yahagi” Class

CHITOSE PS 56	SORACHI PS 57	YAHAGI PS 54
HORONAI PS 59	SUMIDA PS 55	YUBARI PS 58
Displacement, tons	333·15 standard; 375·7 normal	
Dimensions, feet	147·3 pp; 157·2 wl × 24 × 7·4 (normal)	
Guns	1—40 mm AA	
Main engines	2 sets diesels; 1 400 bhp = 15·5 knots	
Radius, miles	4 000 at 12 knots	
Complement	37	

All built by Niigata Engineering Co Ltd. *Yahagi* was laid down on 9 Dec 1955, launched on 19 May 1956 and completed on 31 July 1956. *Sumida* was completed on 30 June 1957. *Chitose* was laid down on 20 Sep 1957, launched on 24 Feb 1958 and completed on 30 Apr 1958. *Sorachi* was completed in Mar 1959, *Yubari* on 15 Mar 1960, *Horonai* on 4 Feb 1961. A photograph of *Yahagi* appears in the 1959-60 and 1960-61 editions, and of *Chitose* in the 1961-62 to 1966-67 editions.



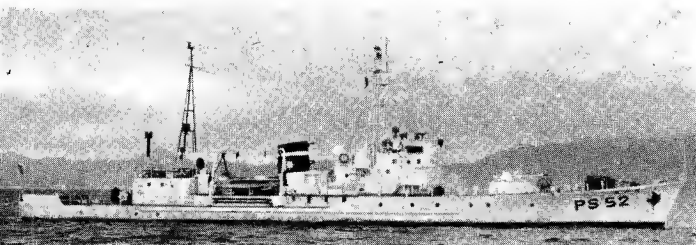
HORONAI 1967, Japanese Maritime Safety Agency, Official

Small Patrol Vessels—continued

2 “Tokachi” Class

TOKACHI PS 51	TATSUTA PS 52
Displacement, tons	336 standard; 381 normal (<i>Tokachi</i>) 324 standard; 369 normal (<i>Tatsuta</i>)
Dimensions, feet	157·5 pp; 164 wl; 170 oa × 21·9 × 11·2
Guns	1—40 mm AA
Main engines	2 sets of 4 cycle single acting diesels 1 500 bhp = 16 knots (max); 12 knots (service) (<i>Tokachi</i>) 1 400 bhp = 15 knots (max); 12 knots (service) (<i>Tatsuta</i>)
Radius, miles	3 824 at 12 knots (<i>Tokachi</i>); 3 930 at 12 knots (<i>Tatsuta</i>)
Complement	37

Tokachi was built by Harima Dockyard, Kure. Laid down on 14 Nov 1953, launched on 8 May 1954 and completed on 31 July 1954. *Tatsuta* was completed on 10 Sep 1954. A photograph of *Tokachi* appears in the 1962-63 to 1966-67 editions.

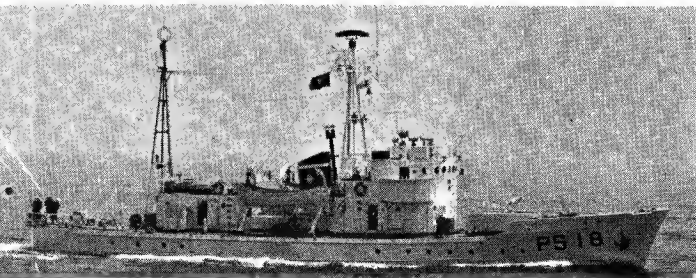


TATSUTA 1967, Japanese Maritime Safety Agency, Official

3 “Nagara” Class

NAGARA PS 18	TONE PS 19	KITAKAMI PS 20
Displacement, tons	260	
Dimensions, feet	131·2 × 23 × 7·2	
Guns	1—40 mm AA	
Main engines	2 diesels; 2 shafts; 800 bhp = 13·5 knots	
Radius, miles	2 000 at 12 knots	
Complement	35	

Improved versions of the “Kuma” class. All launched and completed in 1952.



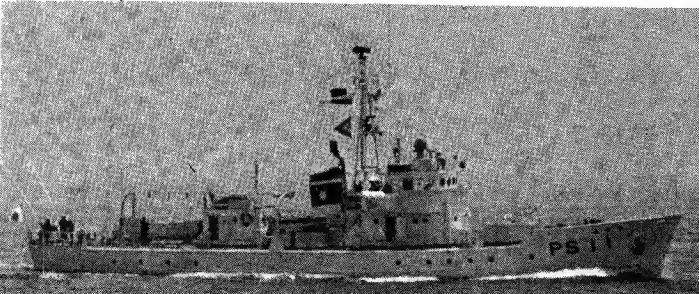
NAGARA 1966, Eiichi Aoki

17 “Kuma” Class

KUMA PS 01	SAGAMI PS 06	YOSHINO PS 12
FUJI PS 02	OYODO PS 07	NOSHIRO PS 13
TENRYU PS 03	ABUKUMA PS 08	KISO PS 14
ISUZU PS 04	KUZURYU PS 09	SHINANO PS 15
ISHIKARI PS 05	KIKUCHI PS 10	CHIKUGO PS 16
	MOGAMI PS 11	KUMANO PS 17

Displacement, tons	258 standard; 275 normal
Dimensions, feet	122 pp; 126·3 wl; 132·2 oa × 23 × 7·5
Guns	1—40 mm AA
Main engines	2 sets diesels; 800 bhp = 13·6 knots
Radius, miles	2 000 at 12 knots
Complement	35

Kuma was built by Nihon Kokan Ltd, Tsurumi Dockyard, laid down on 29 Sep 1950, launched on 12 Jan 1951 and completed on 24 Mar 1951.



MOGAMI 1966, Eiichi Aoki

1 “Kabashima” Type

KABASHIMA PS 100

Small patrol vessel displacing about 100 tons. Of this group *Fujitaka*, PS 151, and *Hayabusa*, PS 153, were deleted from the list in 1965, and *Komadori*, PS 152, in 1966.

Small Patrol Vessels—continued

8 "Kawachidori" Class

HAMACHIDORI	PS 102	TOMOCHIDORI	PS 105	ISOCHIDORI	PS 111
ASACHIDORI	PS 103	SAWACHIDORI	PS 107	HARUCHIDORI	PS 115
MIOCHIDORI	PS 104	WAKACHIDORI	PS 108		
Displacement, tons 300					
Dimensions, feet 152.7 oa × 22.3 × 7.5					
Main engines 2 diesels; 800 bhp = 14 knots					
Complement 27					

Former naval aircraft rescue vessels, employed as local patrol vessels. PS 108 is of older, smaller and different type. A photograph of *Hamachidori* appears in the 1959-60 to 1963-64 editions. *Namichidori*, PS 110, and *Sayochidori*, PS 113, were officially deleted from the list in 1965, *Okichidori*, PS 106 and *Shimachidori*, PS 112, in 1966, and *Kawachidori*, PS 101, *Murachidori*, PS 109, and *Iwachidori*, PS 114, in 1967.

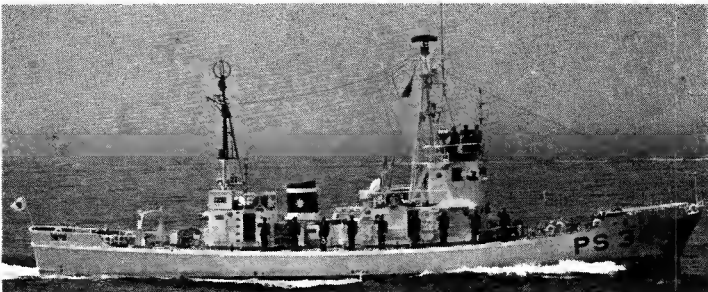


ASACHIDORI 1964, Kohji Ishiwata

11 "Hidaka" Class

ASHITAKA	PS 43	KAMUI	PS 41	TAKANAWA	PS 36
AKIYOSHI	PS 37	KUNIMI	PS 38	TAKATSUKI	PS 39
HIDAKA	PS 32	KURAMA	PS 44	TSURUGI	PS 34
HIYAMA	PS 33	ROKKO	PS 35		
Displacement, tons 166.2 to 164.4 standard; 169.4 normal					
Dimensions, feet 100 pp; 111 oa × 20.8 × 5.5					
Main engines 1 set diesels; 1 shaft; 690 to 700 bhp = 13.5 knots					
Radius, miles 1100 at 12 knots					

Hidaka was built by Azuma Shipbuilding Co. Laid down on 4 Oct 1961, launched on 2 Mar 1962 and completed on 23 Apr 1962. Both *Hiyama* and *Tsurugi* were completed in Mar 1963 by Hitachi Shipbuilding Co. *Kunimi* was built under the 1964 fiscal year programme by Hayashikane Shipbuilding & Engineering Co. Shimoneseki, laid down on 15 Nov 1964, launched on 19 Dec 1964 and completed on 15 Feb 1965. Three more local patrol ships were completed in 1965, two in 1966, and two in 1967. A photograph of *Hidaka* appears in the 1963-64 to 1965-66 editions.



TSURUGI 1966, Eiichi Aoki

3 Special Rescue Type

AKAGI	PS 40	TSUKUBA	PS 31
Displacement, tons 65 (<i>Akagi</i> 41.9 normal)			
Dimensions, feet 80.5 × 21.5 × 3.7; <i>Akagi</i> 78.8 oa × 17.8 × 3.2			
Main engines 2 Niigata diesels; 900 bhp = 18.44 knots trials;			
<i>Akagi</i> 2 Mercedes Benz diesels; 1100 bhp = 28 knots			
Radius, miles 300 at 12 knots; <i>Akagi</i> 260 at 28 knots			

Akagi and *Tsukuba* (photograph in the 1963-64 to 1965-66 editions) were built by Hitachi Zosen, Kanagawa, and completed in 1965 and on 30 Mar 1962 respectively.

BIZAN	PS 42
Displacement, tons 39.8 normal	
Dimensions, feet 80.5 × 18.3 × 2.8	
Guns 1 MG aft	
Main engines 2 Mitsubishi diesels; 1140 bhp = 21.6 knots	
Radius, miles 400 at 18 knots	

Built by Shimoneseki Shipyard & Engine Works, Mitsubishi Heavy Industries Ltd. Completed in Mar 1966. Of light metal construction.



BIZAN 1967, Japanese Maritime Safety Agency, Official

PATROL CRAFT

7 "Shinonome", Class, 9 "Hanayuki" Class

SHINONOME	PC 30	NATSUGUMO	PC 35	MATSUYUKI	PC 40
HATAGUMO	PC 31	TATSUGUMO	PC 36	SHIMAYUKI	PC 41
MAKIGUMO	PC 32	HANAYUKI	PC 37	TAMAYUKI	PC 42
YAEGUMO	PC 33	MINEYUKI	PC 38	HAMAYUKI	PC 43
ASAGUMO	PC 34	ISOYUKI	PC 39	YAMAYUKI	PC 44
				KOMOYUKI	PC 45

Displacement, tons	43 to 46 normal (<i>Hanayuki</i> 37 to 40)
Dimensions, feet	69 × 17.2 × 3.2 (<i>Hatagumo</i> , <i>Makigumo</i> , <i>Shinonome</i> , <i>Yaegumo</i>)
	69 × 17.2 × 3.2 (<i>Asagumo</i> , <i>Natsugumo</i> , <i>Tatsugumo</i>)
	68.9 oa × 16.7 × 3.1 (<i>Hanayuki</i> , <i>Mineyuki</i> , <i>Isoyuki</i> , <i>Matsuyuki</i> , <i>Shimayuki</i> , <i>Tamayuki</i> , <i>Hamayuki</i> , <i>Yamayuki</i> , <i>Komoyuki</i>)
Main engines	2 diesels; 1400 bhp = 20 knots
	2 diesels; 1000 bhp = 18.8 knots (<i>Shinonome</i>)
	2 diesels; 1500 bhp = 21 knots (<i>Hanayuki</i> class)
	3 diesels; 2200 bhp = 25 knots (<i>Yamayuki</i> , <i>Komoyuki</i>)
Complement	9 to 10

Yamayuki and *Komoyuki* were completed in 1966-67, *Matsuyuki*, *Shimayuki*, *Tamayuki* and *Hamayuki* in 1964-65, *Isoyuki* on 29 Feb 1960, *Hanayuki* and *Mineyuki* in Mar 1959, *Asagumo* on 15 Mar 1955, *Natsugumo* on 31 Mar 1955, *Tatsugumo* on 31 May 1955 and the others before Oct 1954. Of light alloy framework and wooden hulls.

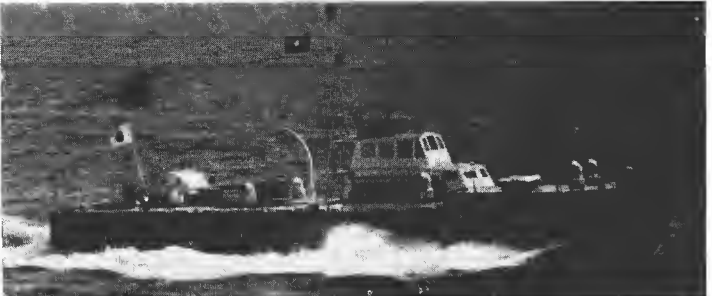


HANAYUKI 1963, Official

HIRYU PC 109

Displacement, tons	33.5 normal
Dimensions, feet	71.5 wl × 18.2 × 4.8
Main engines	2 Packard engines; 1200 bhp = 15 knots

Former US motor torpedo boat of the PT type which served in the US Navy in the Second World War. Built by Annapolis Yacht Yard Inc, Annapolis, Ind, in 1943. Acquired from USA in 1957. Converted to a patrol craft by Azuma Shipbuilding Co; Yokosuka, engines being replaced. Rated as inshore patrol boat.



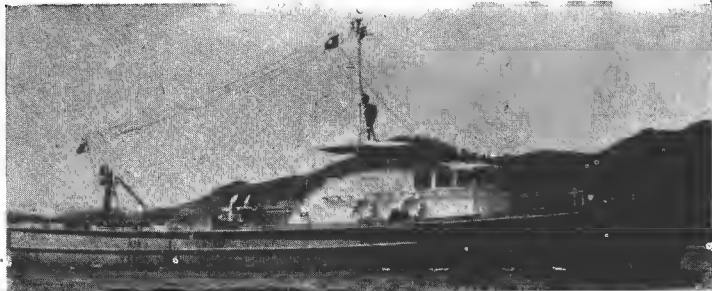
HIRYU 1963, Official

24 "Hatsunami" Class

HATSUNAMI	PC 01	CHIYONAMI	PC 09	TERUZUKI	PC 17
AYANAMI	PC 02	HAYANAMI	PC 10	URAZUKI	PC 18
ISONAMI	PC 03	HATSUZUKI	PC 11	WAKAZUKI	PC 19
URANAMI	PC 04	HANAZUKI	PC 12	YAMAZUKI	PC 20
KYONAMI	PC 05	KIYOZUKI	PC 13	HARUZUKI	PC 21
OKINAMI	PC 06	MOCHIZUKI	PC 14	NATSUZUKI	PC 22
TAMANAMI	PC 07	NIIZUKI	PC 15	AKIZUKI	PC 23
SUZUNAMI	PC 08	SUZUTSUKI	PC 16	FUYUZUKI	PC 24

Displacement, tons	45 normal
Dimensions, feet	75.5 oa × 15.1 × 3.1
Main engines	2 diesels; 700 bhp = 14 knots

Rated as local patrol boats. Seaward defence patrol craft and small submarine-chaser type. A photograph of *Suzutsuki* appears in the 1953-54 to 1960-61 editions.



AYANAMI 1964, Japanese Maritime Safety Agency, Official

Patrol Craft—continued

MUTSUKI PC 25

Displacement, tons 55 normal
Dimensions, feet 83.7 oa × 16 × 3.2
Main engines 2 diesels; 1 000 bhp = 15 knots

A small general purpose vessel officially rated as a local craft.

SURVEYING VESSELS

TENYO HM 05

Displacement, tons 181
Dimensions, feet 95 × 19.2 × 9.2
Main engines Diesels, 230 bhp = 10 knots
Radius, miles 3 160 at 10 knots

HEIYO HM 04

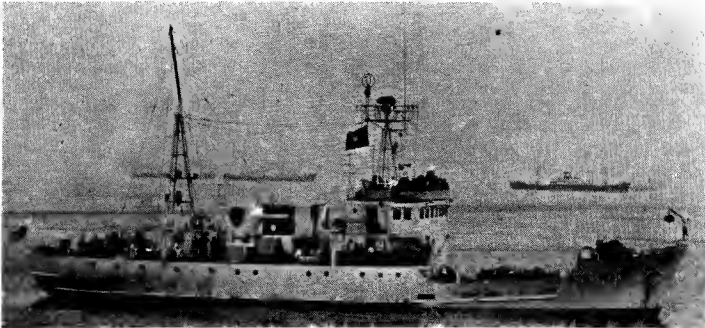
Displacement, tons 69
Dimensions, feet 73.5 × 14.5 × 8
Main engines Diesel; 150 bhp = 9 knots
Radius, miles 670 at 9 knots

Completed by Shimizu Dockyard of Nippon Steel Tube Co Ltd, in Mar 1955. There are 21 other smaller vessels of HS type ranging from 5 to 8 tons displacement.

MEIYO HL 03

Displacement, tons 486 normal
Measurement, tons 360 gross
Dimensions, feet 133 wl, 146 oa × 26.5 × 9.5
Main engines 1 set diesel; 700 bhp = 12 knots
Radius, miles 4 500 at 10 knots
Complement 40

Built by Nagoya Shipbuilding & Engineering Co, Nagoya. Laid down on 14 Sep 1962, launched 22 Dec 1962, completed 15 Mar 1963. Controllable pitch propeller. The former *Merio* (HL 01) was discarded on 1 Mar 1963 due to old age, and replaced by the new *Merio*, HL 03.



MEIYO 1966, Eiichi Aoki

TAKUYO HL 02

Displacement, tons 880 standard, 930 normal
Dimensions, feet 185 pp, 192.8 wl × 31.2 × 10.7 normal
Main engines 2 sets diesels; 1 300 bhp = 14 knots max
Radius, miles 8 000 at 12 knots

Built for the Maritime Safety Agency, by Niigata Engineering Co Ltd. Laid down on 19 May 1956, launched on 19 Dec 1956, and completed in March 1957.

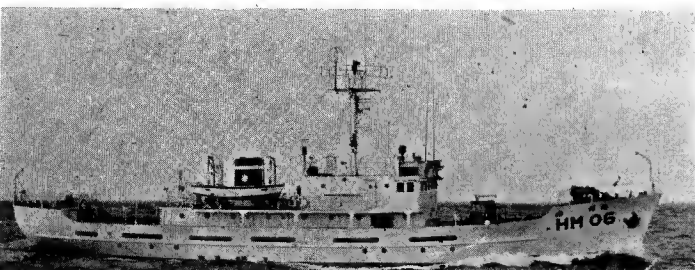


TAKUYO Japanese Maritime Safety Agency, Official

KAIYO HM 06

Displacement, tons 378 normal
Dimensions, feet 132.5 wl, 146 oa × 26.5 × 7.8
Main engines 1 set diesels; 450 bhp = 12 knots
Radius, miles 6 100 at 11 knots

Built by Nagoya Shipbuilding & Engineering Co, Nagoya. Completed on 14 Mar 1964. Rated as Medium Surveying Vessel. Controllable pitch propeller.



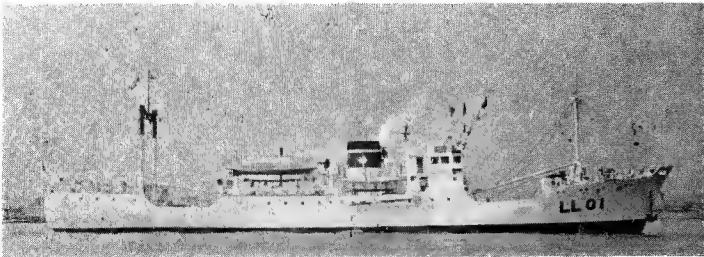
KAIYO 1965, Japanese Maritime Safety Agency, Official

TENDERS

WAKAKUSA LL 01

Displacement, tons 1 815
Dimensions, feet 204 × 32.2 × 19.1
Main engines 1 850 hp

Built by Hitachi Innoshima Dockyard in Mar 1946. Purchased from Osaka Shosen Kaisha, in Jan 1956. Rated as Navigation Aid Vessel (Lighthouse Supply Ship).



WAKAKUSA Japanese Maritime Safety Agency, Official

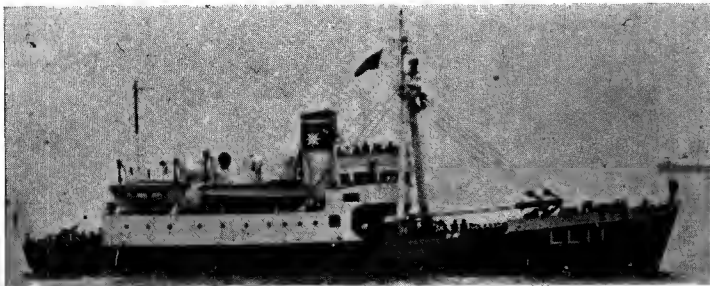
GINGA LL 12

Displacement, tons 500
Dimensions 128.7 × 31.2 × 13.9
Main engines 2 diesels; 420 bhp = 11.26 knots
Radius, miles 2 800 miles at 10 knots

HOKUTO LL 11

KAIO LL 13

The above three are not sister ships. The above particulars refer to *Ginga* which was built by Osaka Shipbuilding Co Ltd. Laid down on 11 Nov 1953, launched on 6 May 1954 and completed on 30 June 1954. Equipped with 15 ton derrick for laying buoys. Rated as Navigation Aid Vessels (Buoy Tenders). A photograph of *Ginga* appears in the 1955-56 to 1964-65 editions. There are also 7 LMs (LM 101 to LM 109) and 15 navigation and buoy tenders for miscellaneous service.



HOKUTO 1964, Kohji Ishiwata

COASTAL PATROL CRAFT

37 Motor Launch Type

HARUSAME	CL 01	HATSUKAZE	CL 13	ASAKAZE	CL 25
MURASAME	CL 02	ARAKAZE	CL 14	YAKAZE	CL 26
SOYOKAZE	CL 03	HARUKAZE	CL 15	KIYOKAZE	CL 27
SAWAKAZE	CL 04	SACHIKAZE	CL 16	IYOKAZE	CL 28
OKIKAZE	CL 05	HATAKAZE	CL 17	FUSAKAZE	CL 29
YAMAKAZE	CL 06	MATSUKAZE	CL 18	TACHIKAZE	CL 30
MINIKAZE	CL 07	IWAKAZE	CL 19	KOTOKAZE	CL 31
UMIKAZE	CL 08	NATSUKAZE	CL 20	KITAKAZE	CL 32
NOKAZE	CL 09	YUKIKAZE	CL 21	ISOKAZE	CL 33
NUMAKAZE	CL 10	SHIMAKAZE	CL 22	KISOKAZE	CL 34
KAWAKAZE	CL 11	YUKAZE	CL 23	MICHIKAZE	CL 35
TANIKAZE	CL 12	YODOKAZE	CL 24	TSURUKAZE	CL 36
				AMATSUKAZE	CL 37

Arakaze is constructed of light alloy, welding having been used for approx 40 per cent of the hull; she was laid down on 11 Nov 1953, launched on 11 Feb 1954 and completed on 29 Mar 1954. A photograph of *Arakaze* appears in the 1958-59 to 1964-65 editions and of *Kawakaze* in the 1953-54 to 1960-61 editions. The others are of wooden construction. *Natsukaze* was completed on 15 Feb 1960. There are 34 other CLs, CL 101 to CL 157 for coastal patrol.

HARBOUR PATROL CRAFT

CS 01 to CS 58 (58 boats) and CS 102 to CS 126 (22 boats). For harbour patrol and seaward defence duties. Of various types and displacements. A photograph of this type, Isagiku CS 63, appears in the 1960-61 to 1964-65 editions.

SERVICE CRAFT

CR 01 to CR 18 (18 boats) and CR 51 for rescue service.

SALVAGE CRAFT

CF 01 to CF 07 (7 boats) for fire-fighting service

UTILITY LAUNCHES

There are 15 local and miscellaneous boats of various sizes and employment.

KENYA

Establishment

The Kenya Navy, which is based in Mombasa, was inaugurated on 12 Dec 1964, the first anniversary of Kenya's independence.

Administration

Commander, Kenya Navy: Commander E. M. C. Walker

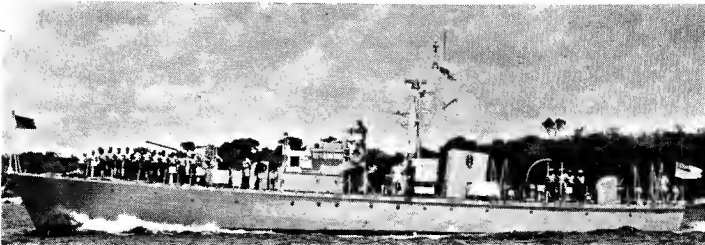
SEAWARD DEFENCE BOAT

1 British "Ford" Class

NYATI (ex-HMS Aberford)

Displacement, tons 120 standard; 160 full load
Dimensions, feet 110 pp; 117.5 oa x 20 x 5
Guns 1—40 mm Bofors AA
Main engines Davey Paxman diesels; 1 100 bhp = 15 knots max

Transferred on loan from Great Britain in 1964, but acquired outright in 1967 and now belongs to Kenya. A starboard bow view of *Nyati* appears in the 1965-66 edition.



NYATI 1966, Kenya Navy, Official

PATROL CRAFT

3 British Vosper Type

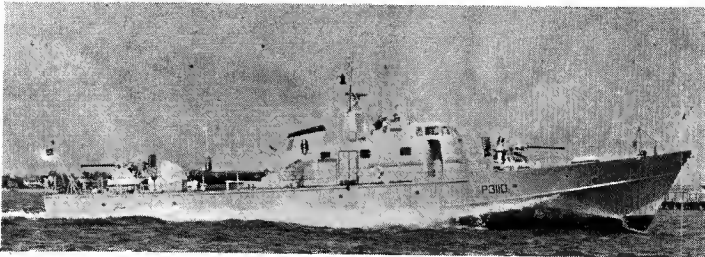
CHUI P 3112

NDOVU P 3117

SIMBA P 3110

Displacement, tons 96 standard; 109 full load
Dimensions, feet 95 wl; 103 oa x 19.8 x 5.8
Guns 2—40 mm Bofors AA
Main engines Paxman Ventura diesels; 2 800 bhp = 24 knots
Radius, miles 1 500 at economical speed
Complement 23 (3 officers and 20 ratings)

The first ships specially built for the Kenya Navy. Designed and built by Vosper Ltd, Portsmouth. Ordered on 28 Oct 1964 for delivery in mid-1966. *Simba* was launched on 9 Sep 1965 and completed on 23 May 1966. *Chui* was handed over on 7 July 1966 and *Ndovu* was handed over on 27 July 1966. All three left Portsmouth on 22 Aug 1966 and arrived at their base in Mombasa on 4 Oct 1966. Air conditioned and fitted with modern radar and communications equipment and roll damping fins. *Chu* means Leopard, *Ndovu* means Elephant, *Simba* means Lion.



SIMBA 1966, courtesy Vosper Ltd, Portsmouth, Builders



CHUI 1967, A. & J. Pavia



NDOVU 1967, A. & J. Pavia

KOREA (NORTH)

Administration

Commander of the Navy: Rear Admiral Yu Chang Kwon

Personnel

Estimated at 9,000 total (800 officers and 8,200 men in June 1967)

FLEET MINESWEEPERS

2 Ex-U.S.S.R. "T 43" Type

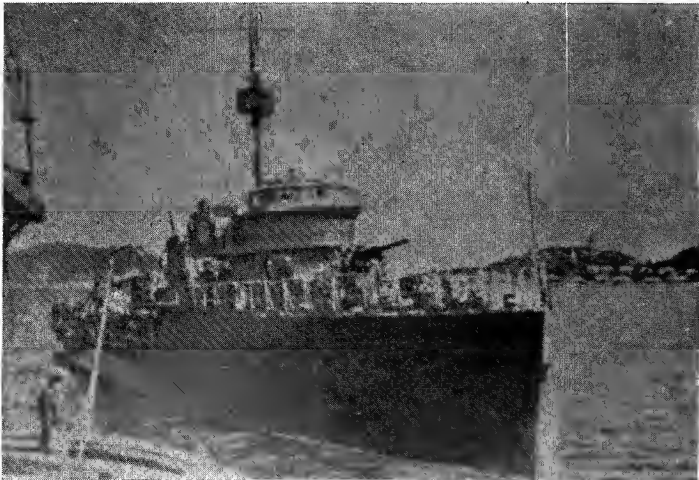
Displacement, tons 500 standard; 600 full load
Dimensions, feet 200 oa x 27.5 x 9

Fleet minesweepers received by the North Korean Navy from the USSR. Built 1954.

8 Ex-U.S.S.R. "Fugas" Type

Displacement, tons 440 standard; 550 full load
Dimensions, feet 203.5 oa x 23.7 x 8
Guns 1—3.9 in; 1—37 mm AA
Main engines Diesels; 2 shafts; 2 800 bhp = 18 knots

Former Soviet minesweepers built in 1935-42. Fitted for minelaying.



"Fugas" Class Added 1964, Ziro Kimata

PATROL VESSELS

2 Ex-U.S.S.R. "Artilerist" Type

Displacement, tons 240 standard; 280 full load
Dimensions, feet 160.8 x 19 x 6.7
Guns 1—3.9 in; 2—37 mm AA
A/S weapons 2 depth charge throwers
Main engines Diesels; 2 shafts; 3 300 bhp = 22 knots

Former Soviet patrol vessels or coastal escorts, rated submarine chasers. Built in 1943.

3 "Shanghai" Type

Displacement, tons 100 full load
Dimensions, feet 120 x 18 x 5.5
Guns 4—37 mm (2 twin); 2—25 mm (1 twin)

Fast patrol boats or motor gunboats reported acquired from China in 1967.

2 New Construction

Displacement, tons circa 160
Dimensions, feet Length 125

Two fast submarine chasers of medium size built for the North Korean Navy.

10 Patrol Type

Displacement, tons circa 130
Dimensions, feet Length 100

Small craft for seaward defence and local duties, rated as submarine chasers.

3 Ex-U.S.S.R. "MO 1" Type

Displacement, tons 50
Dimensions, feet 85.5 x 13 x 4.5
Guns 2—13 mm AA MG
Main engines 2 petrol engines; 2 shafts; 1 300 bhp

Former Soviet motor launches transferred in 1954. Rated as submarine chasers.

TORPEDO BOATS

21 Ex-U.S.S.R. "P 4" Type

Displacement, tons 50
Dimensions, feet 85.5 x 20 x 6
Guns 4—25 mm AA
Main engines Diesels; 2 000 bhp = 42 knots

Former Soviet motor torpedo boats. Built in 1951-57. Aluminium hulls.

MINESWEEPING BOATS

20 Inshore Type

Displacement, tons 20
Dimensions, feet Length, 50

Very small minesweeping craft for inshore, coastal, estuarial and general utility.

KOREA

Administration

Chief of Naval Operations:
Vice-Admiral Kim, Yung Kwan

Vice Chief of Naval Operations:
Rear Admiral Kim, Chum Tae

Commander-in-Chief of Fleet:
Rear Admiral Chang, Chi Soo

Personnel

1967: 16,600 (2,300 officers, 14,300 men)

Diplomatic Representation

Naval Attaché in London:
Colonel Joong Bo Kim

Naval Attaché in Washington:
Captain Tae Young Shin

Mercantile Marine

Lloyd's Register of Shipping:
150 vessels of 193,185 tons gross

Strength of the Fleet

- 1 Destroyer
- 7 Frigates (3 Destroyer Escort Type)
- 3 Fast Transports (ex-Destroyer Escorts)
- 10 Escort Vessels (3-ex Fleet Minesweepers)
- 7 Patrol Vessels (Submarine Chasers)
- 11 Coastal Minesweepers
- 8 Tank Landing Ships
- 12 Medium Landing Ships
- 13 Fleet Support Ships and Service Craft

DESTROYER

Name	No.	Builders	Laid down	Launched	Completed
CHUNG MU (ex-USS Erben, DD 631)	DD 91	Bath Iron Works Corpn, Bath, Maine	28 Oct 1942	21 Mar 1943	28 May 1943

1 Ex-U.S. "Fletcher" Type

Displacement, tons	2 100 standard; 3 050 full load
Length, feet (metres)	360.9 (110.0) wl; 376.5 (114.8) oa
Beam, feet (metres)	39.5 (12.0)
Draught, feet (metres)	18 (5.5) max
Guns, dual purpose	5—5 in (127 mm) 38 cal.
Guns, AA	6—40 mm 8ofors
A/S	2 fixed Hedgehogs; 1 DC rack
Torpedo tubes	5—21 in (533 mm) quintupled
Torpedo racks	2 side launching for A/S torpedoes
Boilers	4 Babcock & Wilcox; 634 psi (44.6 kg/cm ²); 850°F (454°C)
Main engines	2 GE geared turbines
	60 000 shp; 2 shafts
Speed, knots	35 max; 12 economical sea
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	300 (18 officers, 282 men)

Former United States destroyer of the "Fletcher" class, transferred to Korea in May 1963 and renamed.

PHOTOGRAPH. A starboard broadside surface view of *Chung Mu* appears in the 1964-65 to 1966-67 editions.



CHUNG MU

1967, Korean Navy, Official

FRIGATES

2 Ex-U.S. "Bostwick" Type
Destroyer Escorts

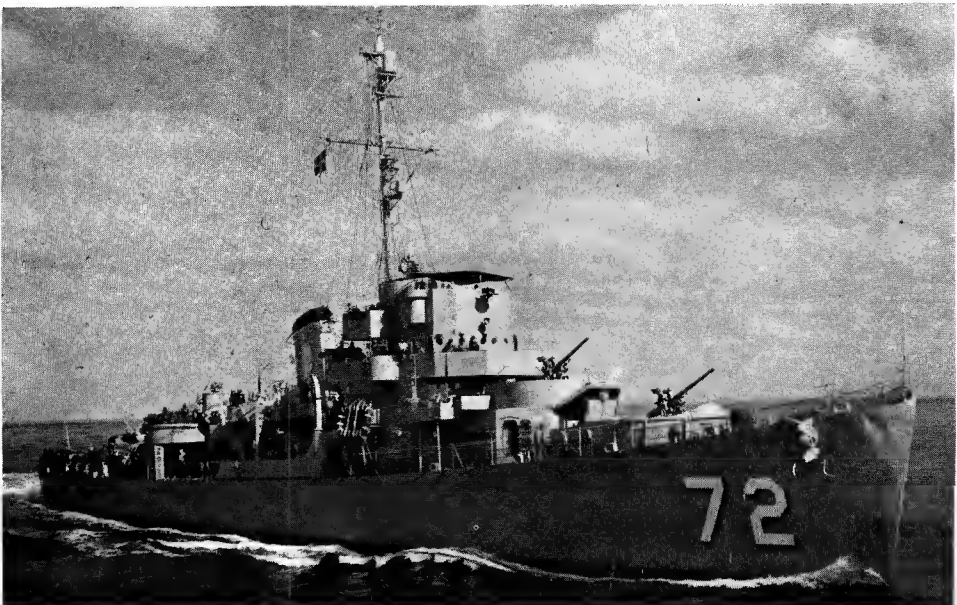
Name	No.	Builders	Launched	Completed
KANG WON (ex-USS Sutton, DE 771)	DE 72	Tampa S.B. Co	6 Aug 1944	22 Dec 1944
KYONG KI (ex-USS Muir, DE 770)	DE 71	Tampa S.B. Co	4 June 1944	20 Aug 1944

Displacement, tons	1 240 standard; 1 900 full load
Length, feet (metres)	306 (93.2) oa
Beam, feet (metres)	36.8 (11.2)
Draught, feet (metres)	14 (4.3) max
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	3—40 mm; 8—20 mm
A/S weapons	8 depth charge throwers
Torpedo tubes	Removed (see notes)
Main engines	GM diesels, electric drive
	6 000 hp; 2 shafts
Speed, knots	20
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	208

Former United States destroyer escorts, DE, of the "Bostwick" class. Transferred from the United States Navy at Boston in 1956 under the Mutual Defense Assistance Program. Renamed after Korean States.

TORPEDO TUBES. These ships formerly carried three 21 inch torpedo tubes in a triple mounting, since removed.

PHOTOGRAPHS. A starboard near broadside surface view of *Kyong Ki* appears in the 1963-64 to 1966-67 editions.



KANG WON

1967, Korean Navy, Official

Frigates—continued

1 Ex-U.S. "Rudderow" Type
Destroyer Escort

Displacement, tons	1 450 standard; 2 230 full load
Length, feet (metres)	306 (93.2) oa
Beam, feet (metres)	36.8 (11.2)
Draught, feet (metres)	14 (4.3) max
Guns, surface	2—5 in (127 mm) 38 cal.
Guns, AA	2—40 mm; 6—20 mm
A/S	DCT
Boilers	2 Combustion Engineering
Main engines	GE geared turbines, electric drive 12 000 shp; 2 shafts
Speed, knots	24
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	378
Complement	186 (6 officers, 180 men)

Former United States destroyer escort of the "Rudderow" class transferred to Korea at Seattle, Washington, on 16 June 1963 and renamed.

Name	No.	Builders	Launched	Completed
CHUNG NAM (ex-USS Holt, DE 706)	DE 73	Defoe Shipbuilding Co, Bay City	15 Dec 1943	9 June 1944



CHUNG NAM

1967, Korean Navy, Official

Name	No.	Builders	Laid down	Launched	Completed
DUMAN (ex-USS Muskogee, PF 49)	PF 61	Consolidated Steel Corpn	18 Sep 1943	18 Oct 1943	16 Mar 1944
IMCHIN (ex-USS Sausalito, PF 4)	PF 66	Kaiser Cargo Inc	7 Apr 1943	20 July 1943	4 Mar 1944
NAKTONG (ex-USS Hoquiam, PF 5)	PF 65	Permanente Metals Corpn	10 Apr 1943	31 July 1943	8 May 1944
TAE DONG (ex-USS Tacoma, PF 3)	PF 63	Permanente Metals Corpn	10 Mar 1943	7 July 1943	6 Nov 1944

4 Ex-U.S. "Tacoma" Type

Displacement, tons	1 430 standard; 2 435 full load
Length, feet (metres)	285.5 (87.0) wl; 304 (92.7) oa
Beam, feet (metres)	37.5 (11.4)
Draught, feet (metres)	13.7 (4.2)
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	2—40 mm; 9—20 mm
A/S weapons	6 depth charge throwers
Boilers	2; 250 psi (17.6 kg/cm ²); 425°F (218°C)
Main engines	Triple expansion 5 500 ihp; 2 shafts
Speed, knots	18
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	645
Complement	181 (10 officers, 171 men)

Former United States patrol frigates, PF, of the "Tacoma" class. Transferred to the USSR under the Lend-Lease scheme during the Second World War. Returned to USA after hostilities and laid up at Yokosuka naval base. Reactivated on the outbreak of the Korean War. *Apnok* and *Duman* were loaned to the Korean Navy and commissioned on 5 Nov 1950. *Naktong* and *Taedong* were transferred on 8 Oct 1951 at Yokosuka. *Apnok*, ex-USS *Rockford* (PF 48), in collision on 21 May 1952, was decommissioned, returned to the USN and expended as a target in 1953. She was replaced by *Imchin*.

PHOTOGRAPHS. A photograph of *Tae Dong* appears in the 1963-64 to 1966-67 editions.



NAKTONG

1967, Korean Navy, Official

ESCORT TRANSPORTS

ASAN (ex-USS Harry L. Corl, APD 108, ex-DE 598)	APD 82
KYONG NAM (ex-USS Cavallero, APD 128, ex-DE 712)	APD 81
UNG PO (ex-USS Julius A. Raven, APD 110, ex-DE 600)	APD 83

Displacement, tons	1 400 standard; 2 130 full load
Dimensions, feet	300 wl; 306 oa × 37 × 12.6
Guns	1—5 in, 38 cal dp; 6—40 mm AA
Main engines	GE turbines with electric drive; 2 shafts; 12 000 bhp = 23 knots
Boilers	2 "D" Express
Oil fuel (tons)	350
Radius, miles	5 500 at 15 knots
Complement	210 plus 162 troops

Former United States high speed transports, APD, modified destroyer escorts. *Kyong Nam* was built by the Defoe Shipbuilding Co, Bay City, Mich. Laid down on 28 Mar 1944. Launched on 15 June 1954. Completed on 13 Mar 1945. Transferred in 1959. *Asan*, laid down on 19 Jan 1944 and launched on 1 Mar 1944, and *Ung Po*, laid down on 26 Jan 1944 and launched on 3 Mar 1944, both by Bethlehem S.S. Co, Hingham, Mass, were transferred in 1966.



KYONG NAM

1967, Korean Navy, Official

ESCORTS

3 Ex-U.S. "Auk" Class MSF Type

SHIN SONG (ex-USS Ptarmigan, MSF 376)	PCE 1001
(ex-USS Speed, MSF 116)	PCE 1002
(ex-USS Dextrous, MSF 341)	PCE 1003

Displacement, tons	890 standard; 1 250 full load
Dimensions, feet	215 wl, 221 oa × 32.2 × 10.8 max
Guns	2—3 in, 50 cal dp (single); 4—40 mm AA (2 twin); 4—20 mm AA (2 pairs)
Tubes	3—21 in (pyramided)
A/S weapons	4 DCT (single); 2 DC tracks
Main engines	2 GM diesel electric; 2 shafts; 3 532 bhp = 18 knots
Cpment	117 total accommodation

Former United States steel-hulled fleet minesweepers. *Shin Song* was built by the Savannah Machinery & Foundry Co. Laid down on 9 Mar 1944, launched on 15 July 1944 and completed on 15 Jan 1945. Transferred from the US to the Republic of Korea Navy on 25 July 1963 at Seattle, Washington. Employed as a patrol escort ship (PCE). The other two were scheduled to be transferred to Korea in 1967.



SHIN SONG

1964, Korean Navy, Official

7 Ex-U.S. "180 ft." Steel PCE Type

HAN SAN (ex-USS *PCEC* 873) PCEC 53
MYONG RYANG (ex-USS *PCEC* 896) PCEC 52
OK PO (ex-USS *PCEC* 898) PCEC 55
PYOK PA (ex-USS *Dania*, *PCE* 870) PCE 57
RO RYANG (ex-USS *PCEC* 882) PCEC 51
RYUL PO (ex-USS *Somerset* *PCE* 892) PCE 58
SA CHON (ex-USS *Batesburg*, *PCE* 903) PCE 59

Displacement, tons 640 standard; 967 full load
 Dimensions, feet 180 wl; 184.5 oa × 33.1 × 10 max
 Guns 1—3 in 50 cal, dp; 3—40 mm AA; 8—20 mm AA
 Main engines Diesels; 2 shafts; 2 000 bhp = 14.3 knots
 Oil fuel (tons) 260
 Radius, miles 4 300 at 10 knots
 Complement 104

Former United States patrol ships, escorts, PCE (four were later redesignated control escorts, PCEC, on assignment to amphibious forces). Built in 1942-45 by Albina Engine and Machine Works, Portland, Oregon (*Han San*, *Pyok Pa*, *Ro Ryang*), and Willamette Iron & Steel Corp, Portland, Oregon (*Myong Ryang*, *Ok Po*, *Ryul Po*, *Sa Chan*). Transferred from the United States Navy in Feb 1955 (*Myong Ryang*, *Ro Ryang*), on loan, in 1956 (*Han San*, *Ok Po*) and 1961 (*Pyok Pa*, *Ryul Po*, *Sa Chon*, *Tang Po*).

Sister ship *Tang Po*, PCE 56 (ex-USS *Maria*, PCE 842) was reported sunk by North Korean coastal batteries north of the demarcation line on 19 Jan 1967.

A photograph of *Han San* appears in the 1959-60 and 1960-61 editions, and of *Ok Po* in the 1961-62 to 1966-67 editions.



RO RYANG

1967, Korean Navy, Official

PATROL VESSELS

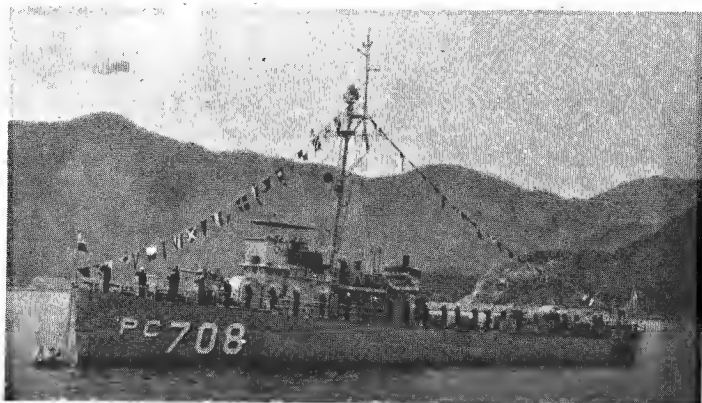
4 Ex-U.S. "173 ft." Steel PC Type

KUM CHONG SAN (ex-USS *Grosse Point*, PC 1546) PC 708
MYO HYANG SAN (ex-PC 600) PC 706
O TAE SAN (ex-USS *Winnemucca*, PC 1145) PC 707
SOL AK (ex-USS *Chadron*, PC 546) PC 709

Displacement, tons 280 standard; 450 full load
 Dimensions, feet 170 wl; 173.7 oa × 23 × 10.8 max
 Guns 1—3 in, 50 cal, dp; 1—40 mm AA; 4—20 mm
 A/S weapons 2 ASW rocket launchers, mousetrap
 Main engines Diesels; 2 shafts; 2 880 bhp = 20 knots
 Complement 71

Former United States submarine chasers, PC, of steel construction, built in 1941-42. *Kum Chong San* and *O Tae San* were transferred on loan at Seattle on 21 Nov 1960 and Nov 1 1960 respectively. *Pak Tu San*, PC 701 (ex *Ensign-Whitehead*, ex-PC 823), *Kum Kang San*, PC 702 (ex-PC 810) and *Sam Kak San*, PC 703 (ex-PC 802) were decommissioned on 21 Aug 1960 and scrapped. *Chrisan* PC 704, was mined and sank off Wonsan, Korea, on 26 Dec 1951. *Han Ra San*, PC 705 (ex-USS PC 485) was sunk in a typhoon at Guam in Nov 1962 and although raised was scrapped in 1964. *Sol Ak* (ex-USS *Chadron*) was transferred at Guam on 22 Jan 1964.

A photograph of *Myo Hyang San* appears in the 1957-58 edition, and of *Sol Ak* in the 1964-65 to 1966-67 editions.



KUM CHONG SAM

1967, Korean Navy, Official

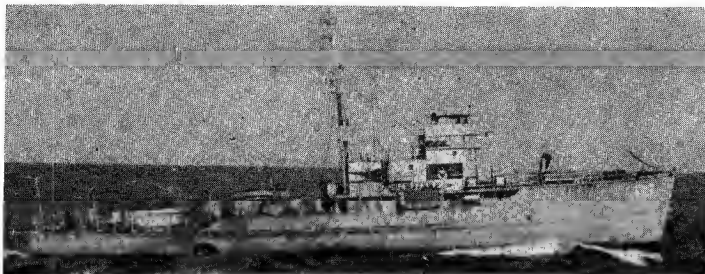
Patrol Vessels—continued

3 Ex-U.S. "136 ft." Wooden PCS Type

HWA SEONG PCS 205 (ex-PCS 1448) **KUM SEONG** PCS 202 (ex-PCS 1445)
MOK SEONG PCS 203 (ex-PCS 1446)

Displacement, tons 251 standard; 338 full load
 Dimensions, feet 130 wl; 136 oa × 24.5 × 8.5
 Guns 1—40 mm; 2—20 mm
 Main engines 2 GM diesels; 2 shafts; 800 bhp = 14 knots

Former United States submarine chasers, PCS type, of wooden construction, built in 1943-44. Acquired by Korea in 1952. *Suseong* PCS 201 (ex-USS PCS 1426) was returned to USA in Apr 1963. *Mok Seong* was lent to the Hydrographic Office in Jan 1964.



MOK SEONG

1967, Korean Navy, Official

COASTAL MINESWEEPERS

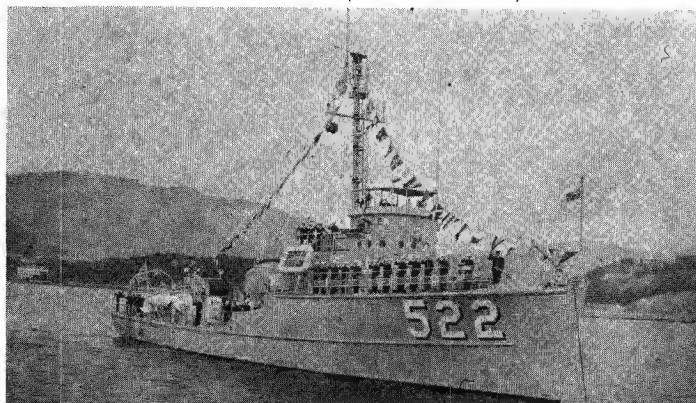
6 Ex-U.S. MSC Type

HA DONG MSC 527 (ex-*MSC* 296) **KUM KOK** MSC 525 (ex-*MSC* 286)
KO HUNG MSC 523 (ex-*MSC* 285) **KUM SAN** MSC 522 (ex-*MSC* 284)
NAM YANG MSC 526 (ex-*MSC* 295)

Displacement, tons 320 standard; 370 full load
 Dimensions, feet 138 pp; 144 oa × 28 × 9 max
 Guns 2—20 mm AA
 Main engines 2 diesels; 2 shafts; 1 200 bhp = 14 knots
 Complement 43

"Bluebird" class specially built by USA for transfer under the Military Aid Program. *Ko Hung* and *Kum San* were transferred to Korea in 1959, followed by *Kum Kok*, transferred at Long Beach, California, on 10 Nov 1959. *Ha Dong* and *Nam Yang* were transferred at Boston, Mass on 16 Nov 1963 and 7 Oct 1963, respectively. Both were built by Petersen Builders, Inc, Sturgeon Bay, Wisc. MSC 302 is building in USA for transfer to Korea under MAP.

A photograph of *Kum Kok* appears in the 1961-62 to 1966-67 editions. MSB 2 was transferred from the US Navy to the Korean Navy on 1 Dec 1961.



KUM SAN

1967, Korean Navy, Official

5 Ex-U.S. YMS Type

KUM HWA MSC(O) 519 (ex-USS *Curllew*, ex-*MSC*(O) 8, ex-YMS 218)
KIM PO MSC(O) 520 (ex-USS *Kite*, ex-*MSC*(O) 22, ex-AMS 22, ex-YMS 369)
KOCHANG MSC(O) 521 (ex-USS *Mockingbird*, ex-*MSC*(O) 22, ex-YMS 419)
KWANG CHE MSC(O) 503 **KIM CHON** MSC(O) 513

Displacement, tons 270 standard; 350 full load
 Dimensions, feet 136 oa × 24.5 × 8 max
 Guns 1—40 mm, 50 cal; 2—20 mm AA
 Main engines Diesels; 1 000 bhp = 15 knots
 Complement 50

Former United States auxiliary motor minesweepers of wooden construction, built in 1941-42. All ex-YMS type. *Kum Hwa*, *Kim Po* and *Kochang* were transferred from the US Navy in 1956. *Kyong Chu*, MSC(O) 502 was decommissioned on 10 May 1962. *Kang*, *Kyong* MSC(O) 510 was scrapped in 1964.



KOCHANG

1967, Korean Navy, Official

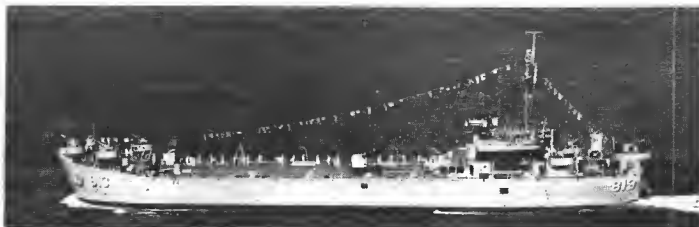
TANK LANDING SHIPS

8 Ex-U.S. LST Type

BI BONG LST 809 (ex-USS *LST* 218)
BUK HAN LST 815 (ex-USS *Lynn County LSC* 900)
DUK BONG LST 808 (ex-*LST* 227)
HWA SAN LST 816 (ex-USS *Pendet County LST* 1080)
KAE BONG LST 810 (ex-USS *Berkshire County, LST* 288)
SU YONG LST 813 (ex-USS *Kane County LST* 853)
UN BONG LST 807 (ex-USS *LST* 1010)
WEE BONG LST 812 (ex-USS *Johnson County LST* 849)

Displacement, tons 1 635 standard; 2 366 beaching; 4 080 full load
 Dimensions, feet 316 wl; 328 oa × 50 × 14 max
 Guns 7 to 10—40 mm AA; 6 or 8—20 mm AA
 Main engines Diesel; 2 shafts; 1 700 bhp = 11 knots
 Cargo capacity, tons 2 100
 Complement 113

Former United States tank landing ships. *Duk Bong* and *Un Bong* were transferred on 22 Mar 1955 at S. Diego, *Kae Bong* on 5 May 1956 at Seattle, *Buk Han*, *Su Yong* and *Wee Bong* on 2 Dec 1958, 22 Dec 1958 and 13 Jan 1959, respectively, at Seattle and *Hwa San* was transferred on 30 Oct 1958 at Long Beach.



SU YONG 1967, Korean Navy, Official

ROCKET LANDING SHIP

SI HUNG LSMR 311 (ex-USS *St Joseph River, LSMR* 527)

Displacement, tons 1 102 standard; 1 280 full load
 Dimensions, feet 203.5 oa × 34.5 × 8.3 max
 Guns 1—5 in; 2—40 mm AA; 2—20 mm AA
 Launchers 8—5 in rocket projectors
 Main engines Diesels; 2 shafts; 2 800 bhp = 13 knots
 Complement 142

Former US medium landing ship (rocket). Transferred to the Korean Navy at San Diego, Cal. on 15 Sep 1960. *Si Hung* means "The Beginning of Prosperity."



SI HUNG 1967, Korean Navy, Official

MEDIUM LANDING SHIPS

11 Ex-U.S. LSM Type

BIYOUP LSM 607 (ex-USS *LSM* 96) **PUNG DO** LSM(F) 608 (ex-USS *LSM* 54)
KA DUK LSM 605 (ex-USS *LSM* 462) **SIN-MI** LSM 612 (ex-USS *LSM* 316)
KI RIN LSM 610 (ex-USS *LSM* 19) **TAE CHO** LSM 601 (ex-USS *LSM* 546)
KU MOON LSM 606 (ex-USS *LSM* 30) **ULRYUNG** LSM 613 (ex-USS *LSM* 17)
NEUNG RA LSM 611 (ex-USS *LSM* 84) **WOLMI** LSM 609 (ex-USS *LSM* 57)
YEU DO LSM 602 (ex-USS *LSM* 268)

Displacement, tons 743 beaching; 1 095 full load
 Dimensions, feet 196.5 wl; 203.5 oa × 34.5 × 8.5 max
 Guns 1—40 mm AA; 4—20 mm AA
 Main engines Diesels, direct drive; 2 shafts; 2 880 bhp = 12.5 knots
 Complement 62

LSM 19, 30, 54, 84 and 96 were transferred to the Korean Navy at Seattle in 1956. LSM 19, 84 transferred on 3 July 1956, LSM 17 on 18 Oct 1956, LSM 316 on 18 Nov 1956. *Pun Do*, (LSM(F) 608) was converted into a Mine Force Flagship. *Dok Do*, LSM 603 (ex-USS *LSM* 419) was decommissioned on 26 Feb 1963. A photograph of *Ku Moon* appears in the 1963-64 to 1966-67 editions.



YEU DO 1967, Korean Navy, Official

DISPOSALS OF MTBs

Of the four former United States Navy motor torpedo boats, *Olpamei* PT 26 (ex-USS PT 613) was destroyed in Sep 1952 while on loan, *Jebi* PT 27 (ex-USS PT 620) was scrapped in 1964, and *Kalamaeki* PT 23 (ex-USS PT 616) and *Kiroki* PT 25 (ex-USS PT 619) in 1957.

LANDING CRAFT REPAIR SHIP

DUK SOO (ex-USS *Minotaur, ARL* 15, ex-*LST* 645)

Displacement, tons 2 366 standard; 4 100 full load
 Dimensions, feet 316 wl; 328 oa × 50 × 11.2
 Guns 2—40 mm AA
 Main engines GM diesels; 2 shafts; 1 800 bhp = 11.5 knots
 Complement 277

Former United States landing craft repair ship. Built by Chicago Bridge & Iron Co Seneca, Del. Laid down on 20 June 1944. Launched on 20 Sep 1944. Completed on 30 Sep 1944



DUK SOO 1963, Korean Navy, Official

SUPPLY SHIPS

KIMHAE AKL 902 **WAEKWAN** AKL 903
KUN SAN AKL 908 **MA SAN** AKL 909 (ex-USS *AKL* 35)
 (ex-USS *Sharps, AKL* 10) **MOCK PO** AKL 907 (ex-USCGC *Trillium, WAK* 170)

Displacement, tons 520
 Dimensions, feet 179 oa × 32 × 10 max
 Guns 1—40 mm AA; 2—30 mm AA
 Main engines Diesel; 2 shafts; 1 000 shp = 13 knots
 Complement 43 *Kimhae*; 49 others

AKL 35 was transferred from the USA on 6 Sep 1956. *Kun San* on 3 Apr 1956. *Ma San* on 9 Sep 1956, and *Mack Po* in 1956. Ex-USS Army FS craft.

OILERS

CHUN-JI (ex-*Birk*) AO 2

PUJON (ex-*Hassel*) AO 3

Displacement, tons 1 400 standard; 4 160 full load
 Measurement, tons 2 257 and 2 256 gross, respectively
 Dimensions, feet 275 pp × 44.5 × 18.2
 Guns 1—40 mm AA; 2—20 mm AA
 Complement 73

Former Norwegian tankers. Both built by A/S Berken Mek Verks Bergen, Norway in 1951. Taken over by Korean Navy at Rotterdam, Sep and July 1953, respectively.

KU RYONG YO 1, ex-YO 106 (ex-USS *YO* 118)

Displacement, tons 428 standard; 1 126 full load
 Dimensions, feet 174 oa × 33 × 13 max
 Main engines Union diesel; 1 shaft; 500 shp = 7 knots
 Complement 36

Former US self-propelled fuel oil barge. Transferred to Korea on 3 Dec 1946.

HWA CHON YO 5 (ex-*Paek Yeon, AO* 5, ex-USS *Derrick, YO* 59)

Displacement, tons 893 standard; 2 700 full load
 Dimensions, feet 236 oa × 38 × 15 max
 Guns 3—20 mm AA
 Main engines Fairbanks-Morse diesel; 1 shaft; 1 150 bhp = 10.5 knots
 Complement 46

Former US self-propelled fuel oil barge. Loaned to Korea on 14 Oct 1955.

TUGS

DO BONG ATA 3 (ex-USS *Pinola, ATA* 206)
YONG MUN ATA 2 (ex-USS *Keosanqua, ATA* 198)

Displacement, tons 538 standard; 838 full load
 Dimensions, feet 134.5 wl; 143 oa × 34 × 13.2 max
 Guns 1—3 in; 4—20 mm AA
 Main engines GM diesel-electric; 1 shaft; 1 500 hp = 13.5 knots

Former United States auxiliary ocean tugs of the "Maricopa" class, ATA type. Built by Gulfport Boiler and Welding Works, Inc, Port Arthur, Texas (*Do Bong*) and Livingston Shipbuilding Co, Orange, in 1944-45. Transferred on 2 Jan 1962.



YONG MUN 1967, Korean Navy, Official

KUWAIT

PATROL BOATS

2 2 New Construction

AL-SALEMI

AL-MUBARAKI

Dimensions, feet	78 oa × 15.5 × 4.5 mean
Main engines	2 Rolls Royce 8-cylinder 90° V form marine diesels 1 340 shp at 1 800 rpm, 1 116 shp at 1 700 rpm = 20 knots
Range	700 nautical miles at 15 knots cruising speed
Complement	12 (5 officers, 7 men)

Designed and built by John I Thornycroft & Co Ltd, Woolston, Southampton. *Al-Salemi* and *Al-Mubarak* were ordered in Aug 1965 and shipped to Kuwait on 8 Sep 1966. Specially designed for operational duties in the Arabian Gulf. Hulls are of welded steel construction, with superstructures of aluminium alloy. Twin hydraulically operated rudders, giving good manoeuvrability. Decca type D 202 radar. Two Lister Blackstone air-cooled diesel generators, 220 volts. Two sister ships were ordered from the Vosper-Thornycroft Group on 12 Sep 1966.



AL-SALEMI 1967, courtesy Vosper Thornycroft Group

Built by the Singapore yard of Thornycroft (Malaysia) Limited, now part of the Vosper-Thornycroft Group. Known as 50-foot patrol craft. Completed in 1962.

LEBANON
PATROL BOATS

TARABLOUS

Displacement, tons	105 standard
Dimensions, feet	124.7 × 18 × 5.8
Guns	2—40 mm
Main engines	2 Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 27 knots
Radius, miles	1 500
Complement	19 (3 officers, 16 men)

Tarablous was built by Ch. Navals de l'Estérel. Laid down in June 1958. Launched in June 1959. Completed in 1959.

3 "Biblos" Class

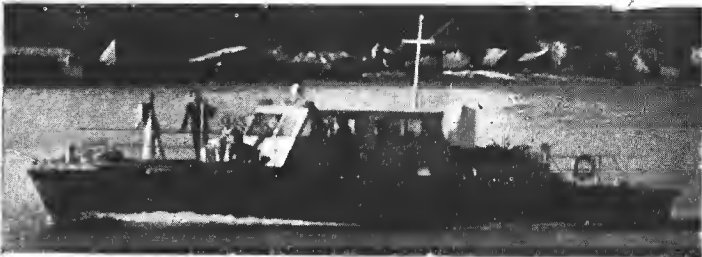
BIBLOS

SIDON

TIR

Displacement, tons	28 standard
Dimensions, feet	66 × 13.5 × 4
Guns	1—20 mm AA; 2 MG
Main engines	General Motors diesels; 2 shafts; 530 bhp = 18.5 knots

French built ML type craft. Built by Ch. Navals de l'Estérel. Launched in 1954-55. Ex-LCU 1474.



BIBLOS 1960, Captain Aldo Fraccaroli

LANDING CRAFT

Ex-LCU 1474

Displacement, tons	180 standard; 360 full load
Dimensions, feet	115 × 34 × 6
Guns	2—20 mm AA
Main engines	3 diesels; 3 shafts; 675 bhp = 10 knots

Former United States utility landing craft built in 1957, transferred in Nov 1958.

LIBERIA

Personnel

The small naval service of coast guard has about 200 officers and men

Mercantile Marine

Lloyd's Register of Shipping: 1,436 vessels of 20,603,301 tons gross

MOTOR GUNBOATS

2 U.S. PGM Type

PGM 69

PGM 102

Displacement, tons	100
Dimensions, feet	95 oa × 19 × 5
Guns	1—40 mm AA
Main engines	4 diesels; 2 shafts; 2 200 bhp = 21 knots
Complement	15

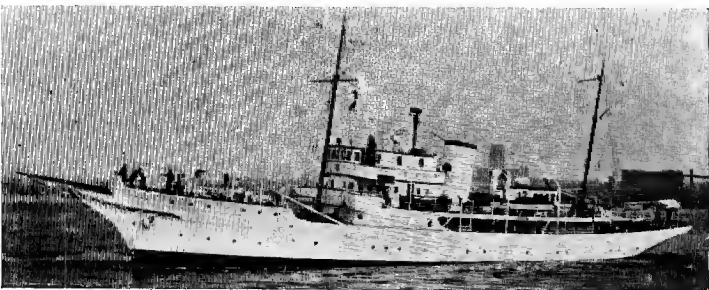
PGM 102 (US number) is being built in the United States for transfer under the Military Aid Programme. PGM 69, sister boat, was the prototype for Liberia from USA.

PRESIDENTIAL YACHT

LIBERIAN (ex-Virginia)

Measurement, tons	742 (<i>Thames</i>); 692.27 gross; 341.6 net
Dimensions, feet	173 wl; 209 oa × 29.7 × 13.1

Motor yacht of 742 tons (yacht measurement) built in 1930 by William Beardmore & Co Ltd, Dalmuir. Purchased by Liberia for use as the Presidential yacht in 1957. (Her previous owners were the Trustees of the Estate of the late Viscount Camrose). Extensively refitted by Cammell Laird & Co Ltd, Birkenhead, at the end of 1962.



LIBERIAN 1964, Official

PATROL BOATS

2 U.S. CGC Type

ML 4001

ML 4002

Displacement, tons	11.5
Dimensions, feet	40.5 oa × 11.5 × 3.5
Guns	2 MG
Main engines	2 GM diesels; 2 shafts; 380 bhp = 23 knots max

Coastguard cutters built at the United States Coast Guard Yard, Curtis Bay, Maryland, presented by the USA and transferred during 1957. A photograph of ML 4002 appears in the 1957-58 to 1965-66 editions.



ML 4002 courtesy Dr Giorgio Arra

LANDING CRAFT

Utility Type

Landing craft reported to be used for transport and general utility purposes.

LAOS

It is reported there are four river squadrons of small gunboats and landing craft.

LIBYA

Establishment

The Royal Libyan Navy was established in Nov 1962 when a British Naval Mission was formed and first recruits were trained at HMS *St Angelo*, Malta. Cadets were also trained at the Britannia Royal Naval College, Dartmouth, and technical ratings at HMS *Sultan*, Gosport, and HMS *Collingwood*, Fareham, England.

Administration

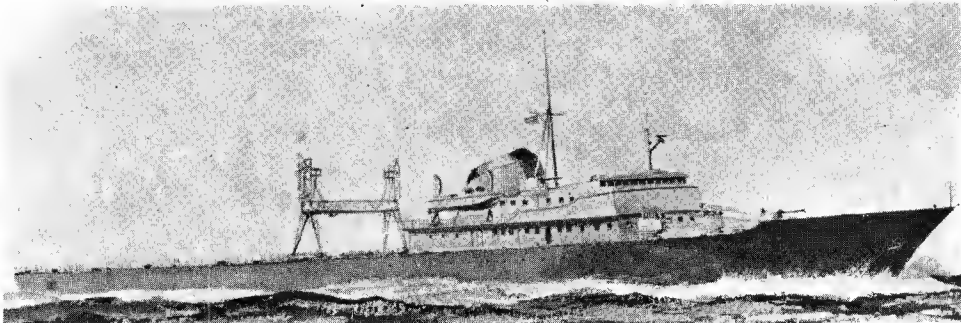
Head of the Armed Forces of Libya: General Nuri es Sadik
Senior Officer, Royal Libyan Navy:
Lieutenant-Commander Mansur Bader, RLN
Head of the British Naval Mission: Captain W. J. Woolley, RN

LOGISTIC SUPPORT SHIP

1 New Construction

Displacement, tons 2 000
Main engines Paxman diesels
Speed, knots 15

The Vosper-Thornycroft Group received the order for this ship on 31 Jan 1967 (announced) for delivery in late 1968. She was designed and is being built by John I. Thornycroft & Co Ltd, at the Group's Woolston Shipyard. She will provide full logistic support, including mobile docking maintenance and repair facilities for the Libyan fleet and will act as parent ship for the corvette *Tobruk* and the three fast patrol boats being built.



ZILTEN

1967, courtesy Vosper-Thornycroft Group

CORVETTES

1 New Construction

TOBRUK

Displacement, tons 440 standard; 500 full load
Dimensions, feet 162 wl; 177 oa x 28.5 x 10 mean (13 props)
Guns 1-4 in; 4-40 mm AA (single)
Main engines 2 Paxman Ventura 16 YJCM diesels; 2 shafts; 3 800 bhp = 18 knots
Radius, miles 2 900 at 14 knots
Complement 63 (5 officers and 58 ratings)

Designed and built by Vosper Limited, Portsmouth, in association with Vickers Limited. Launched on 29 July 1965, completed on 30 Mar 1966, commissioned for service at Portsmouth on 20 Apr 1966, sailed for Libya on 30 May 1966 and arrived in Tripoli on 15 June 1966. A gun corvette fitted with surface warning radar, Vosper roll damping fins and air-conditioning. Duties for which she was designed include protection of shipping from air and sea attack, training officers and men of the Royal Libyan Navy, and State visiting. A suite of State apartments is included in the accommodation.



TOBRUK

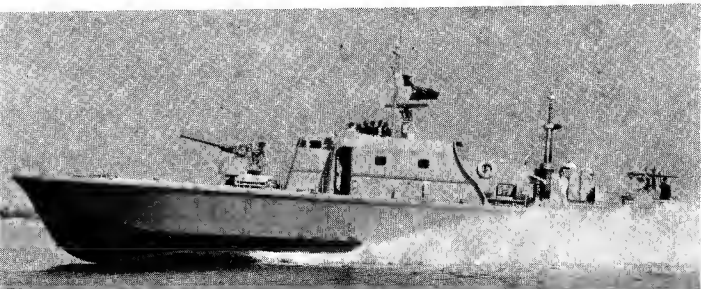
1966, courtesy Vosper Limited, Portsmouth, Builders

FAST PATROL BOATS

3 New Construction

Displacement, tons 95 standard; 114 full load
Dimensions, feet 90 pp; 96 wl; 99 oa x 25.5 x 7
Main engines 3 Bristol Siddeley Proteus gas turbines; 3 shafts; 12 750 bhp = 54 knots

The order for these three fast patrol boats from Vosper Limited, Portsmouth, England, was announced on 12 Oct 1966. They will be generally similar to the motor torpedo boats designed and built by Vosper for the Royal Danish Navy. Built at the Vosper-Thornycroft Group's Portchester shipyard. Fitted with air conditioning and modern radar and radio equipment.



FPB Type

courtesy Vosper Limited, Portsmouth, Builders

INSHORE MINESWEEPERS

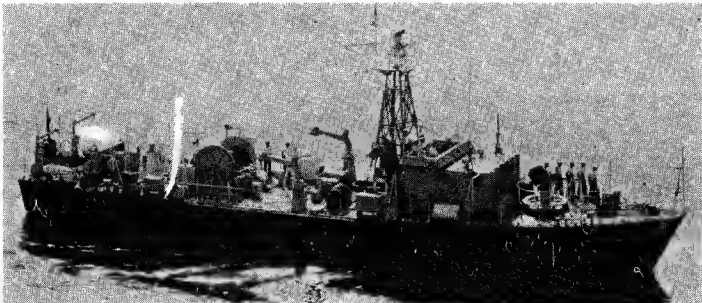
2 British "Ham" Type

BRAK (ex-HMS *Harpham*)

BUANA (ex-HMS *Greetham*)

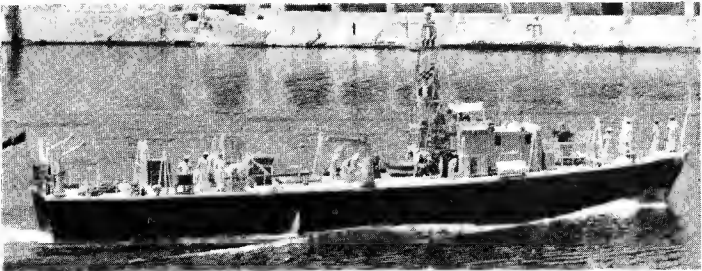
Displacement, tons 120 standard; 159 full load
Dimensions, feet 100 pp; 106 oa x 21.2 x 5.5
Guns 1-20 mm AA
Main engines 2 Paxman diesels; 1 100 bhp = 14 knots
Complement 15 to 22

Lent to Great Britain in 1963 to form the nucleus of a navy for Libya, and given outright to the Royal Libyan Navy in 1966. Given Libyan names in Sep 1966.



BUANA

1967, A. & J. Pavia



BRAK

1965, A. & J. Pavia

MAINTENANCE REPAIR CRAFT

MRC 1013 (ex-LCT)

Displacement, tons 657
Dimensions, feet 225 pp, 231.3 oa x 39 x 3.3 forward, 5 aft
Main engines 4 Paxman diesels; 1 840 bhp = 9 knots cruising

Purchased from Great Britain on 5 Sep 1966. Depot ship for minesweepers.

CUSTOMS PATROL VESSELS. *Ar-Rakib* and *Farwa* were completed on 4 May 1967 by John I Thornycroft, Woolston, 100 tons, 100 x 21 x 5.5 feet, 3 Rolls Royce DV8TLM diesels, 1 740 bhp = 18 knots, 1-20 mm gun, 1 800 miles range at 14 knots, fuel 20 tons. Designed specifically for operation in North African waters. Welded steel construction.

There are also three fast patrol launches for customs and fishery protection, see full particulars in the 1963-64 and 1964-65 editions.

MALAYSIA

Administration

Chief of Naval Staff:
Commodore K. Thanabalasingam, RMN

Diplomatic Representation

Military Adviser in London:
Colonel Ismail bin Ibrahim, PBS, KMN

Personnel

1967: 4 000 officers and ratings

Ships

The names of Malaysian warships are prefixed by K.D. (Kalap Diraja) Royal Ship

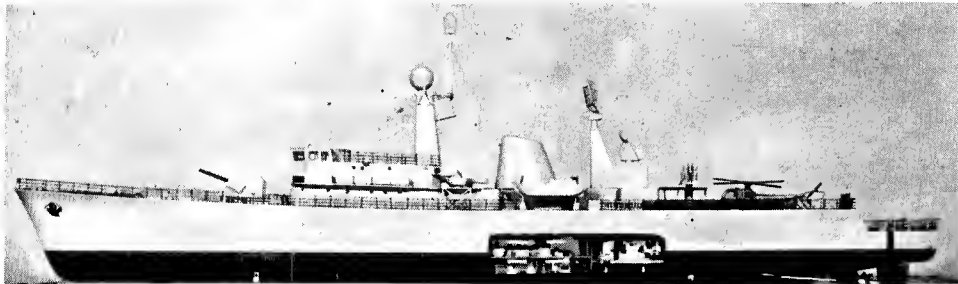
- Strength of the Fleet**
- 1 Frigate
 - 6 Coastal Minesweepers
 - 2 Inshore Minesweepers
 - 4 Fast Patrol Craft
 - 4 Motor Torpedo Boats
 - 24 Fast Patrol Craft
 - 23 Landing Craft, etc

FRIGATES

1 New Construction. Yarrow Type

Displacement, tons 1 600
Length, feet (metres) 308 (93.9) oa
Beam, feet (metres) 34 (10.4)
Draught, feet (metres) 14.7 (4.5)
Aircraft 1 helicopter
Missiles, AA 1 quadruple "Seacat" launcher
Guns, dual purpose 1—4.5 in (114 mm)
Guns, AA 2—40 mm
A/S weapons 1 three-barrelled DC mortar
Main engines 1 Bristol-Siddeley Olympus gas turbine, 19 500 shp;
Crossley Pielstick diesel, 3 850 bhp
Complement 140

An order was placed with Yarrow & Co Ltd, Scotstoun, Glasgow, on 11 Feb 1966 for a general purpose frigate. A long range vessel of a new design developed by Yarrow, resulting in a low cost naval ship with an



NEW FRIGATE (Model)

1966, Yarrow & Co, Ltd, Scotstoun, Glasgow

armament-displacement ratio superior to that of any comparable warship. The ship is fully automatic with a consequent saving in complement. Scheduled to be ready for delivery in 1969. Cost estimated at £4 000 000.

1 Ex-British "Loch" Class.

Displacement, tons 1 575 standard; 2 400 full load
Length, feet (metres) 286 (87.2) pp; 297.2 (90.6) wl
307 (91.7) oa
Beam, feet (metres) 38.5 (11.7)
Draught, feet (metres) 14.9 (4.5) max
Guns, dual purpose 2—4 in (102 mm)
Guns, AA 6—40 mm
A/S 2 Squid 3-barrelled DC mortars
Boilers 2 Admiralty 3-drum; 225 psi (15.8 kg/cm²)
Main engines 2 sets triple expansion, 5 500 ihp; 2 shafts
Speed, knots 19.5 designed; 17 max
Radius, miles 9 500 at 12 knots
Complement 148 (10 officers, 138 ratings)

On transfer to the Royal Malaysian Navy she was refitted with a helicopter landing deck, air-conditioned throughout, modern radar, and extra accommodation, in HM Dockyard, Portsmouth, from whence she sailed for Singapore on 12 Nov 1964.

NOMENCLATURE. *Hang Tuah* is the name of a Malay Admiral and warrior in the 15th century.

Name	No	Builders	Laid down	Launched	Completed
HANG TUAH (ex-HMS <i>Loch Insh</i>)	F 433	Henry Robb Ltd, Leith	17 Nov 1943	10 May 1944	20 Oct 1944



HANG TUAH

1966, Wright & Logan

COASTAL MINESWEEPERS

6 Ex-British "Ton" Class

BRINCHANG (ex-HMS *Thankerton*) M 1172
JERAI (ex-HMS *Dilston*) M 1168
KINABALU (ex-HMS *Essington*) M 1134
LEDANG (ex-HMS *Hexton*) M 1143
MAHAMIRU (ex-HMS *Darlaston*) M 1127
TAHAN (ex-HMS *Lullington*) M 1163

Displacement, tons 360 standard; 425 full load
Dimensions, feet 140 pp; 152 oa x 28.8 x 8.2
Guns 1—40 mm AA forward; 2—20 mm AA aft
Main engines Diesels; 2 shafts; 2 500 bhp = 15 knots max
Oil fuel, tons 45
Complement 39

Mahamiru was transferred from the Royal Navy in 1960 under the Defence Agreement. *Ledang* was refitted at HM Dockyard, Chatham before transfer, and was commissioned and sailed for Malaysia in Oct 1963. *Jerai* and *Kinabalu* were refitted in Great Britain and arrived in Malaysia in summer 1964. *Brinchang* and *Tahan* were refitted in Singapore and transferred to the Royal Malaysian Navy in May and Apr 1966, respectively. A photograph of *Jerai* appears in the 1964-65 and 1965-66 editions and of *Ledang* in the 1964-65 to 1966-67 editions.



MAHAMIRU

1966, Royal Malaysian Navy, Official

INSHORE MINESWEEPERS

2 Ex-British "Ham" Class

JERONG (ex-HMS *Felmersham*) M 2627 **TODAK** (ex-HMS *Boreham*) M 2610

Displacement, tons 120 standard; 159 full load
Dimensions, feet 100 pp; 106.5 oa x 21.2 x 5.5
Guns 1—40 mm AA forward; 2—20 mm AA aft (see notes)
Main engines 2 Paxman diesels; 1 100 bhp = 14 knots max.
Oil fuel, tons 15
Complement 22

M 2601 Series. *Jerong* and *Todak* were transferred from the Royal Navy at Singapore in Jan and Mar 1966, respectively. As a temporary measure they have been armed with two single 20 mm AA guns aft instead of sweeping gear. Of four sister boats transferred from Great Britain in 1958 and 1959, *Temasek* (ex-HMS *Brantingham*) M 2612 was paid off in 1966, and *Langka Suka* (ex-HMS *Bedham*) M 2606, *Sri Johor* (ex-HMS *Altham*) M 2602 and *Sri Perlis* (ex-HMS *Asheldham*) M 2604 were paid off in 1967.



JERONG

1967, Royal Malaysian Navy, Official

FAST PATROL BOATS

4 "Perkasa" Class

GEMPITA P 152	HANDALAN P 151	PENDEKAR P 153	PERKASA P 150
Displacement, tons	95 standard; 114 full load		
Dimensions, feet	90 pp; 96 wl; 99 oa x 25.5 x 7		
Guns	1—40 mm AA; 1—20 mm AA		
Torpedoes	4—21 in Mk 2 side launchers		
Main engines	3 Rolls Royce Proteus gas turbines; 3 shafts; 12 750 bhp = 54 knots		
	GM diesels on wing shafts for cruising = 10 knots		

The design is a combination of the "Brave" class hull form and "Ferocity" type construction. Ordered from Vosper Limited, Portsmouth, England, on 22 Oct 1964. Generally similar to the motor torpedo boats built by Vosper for the Royal Danish Navy. They can also operate in the gunboat rôle or a minelaying rôle. *Perkasa* (Valiant) was launched on 26 Oct 1965, *Handalan* (Reliant) on 18 Jan 1966, *Gempita* (Thunderer) on 6 Apr 1966, and *Pendekar* (Champion) on 24 June 1966. The hull is entirely of glued wooden construction, with upperworks of aluminium alloy. Equipment includes Rover gas turbine generating sets, full air conditioning, Decca radar, and comprehensive navigation and communications system. The craft will be shipped to Malaysia in mid 1967.



PERKASA 1966, courtesy Vosper Limited, Portsmouth

PATROL CRAFT

6 "Kedah" Class

SRI KEDAH P 3138	SRI PAHANG P 3141	SRI SELANGOR P 3139
SRI KELANTAN P 3142	SRI PERAK P 3140	SRI TRENGGANU P 3143

4 "Sabah" Class

SRI MELAKA P 3147	SRI SABAH P 3144
SRI NEGRI SEMBILAN P 3146	SRI SARAWAK P 3145

14 "Kris" Class

BADEK P 37	KRIS P 34	SERAMPANG P 41
BELADAU P 44	LEMBING P 40	SRI JOHOR P 49
KELEWANG P 45	PANAH P 42	SRI PERLIS P 47
KERAMBIT P 43	RENCHONG P 38	SUNDANG P 36
	RENTAKA P 46	TOMBAK P 39

Displacement, tons	96 standard; 109 full load
Dimensions, feet	95 wl; 103 oa x 19.8 x 5.5
Guns	2—40 mm; 70 cal AA
Main engines	2 Bristol Siddeley Maybach MD 655/18 diesels; 3 500 bhp = 27 knots max
Radius, miles	1 400 (<i>Sabah</i> class 1 660) at 14 knots
Complement	22 (3 officers, 19 ratings)

All 24 craft were built by Vosper Limited, Portsmouth. The first six boats, constituting the "Kedah" class were ordered in 1961 for delivery in 1963. The four boats of the "Sabah" class were ordered in 1963 for delivery in 1964. The remaining 14 boats of the "Kris" class were ordered in 1965 for delivery between 1966 and 1968. All are of prefabricated steel construction and are fitted with Decca radar, air conditioning and Vosper roll damping equipment. The difference between the three classes are minor, the later ones having improved radar, communications, evaporators and engines of Maybach, as opposed to Bristol Siddeley construction. *Sri Johor*, the last of the 14 boats of the "Kris" class, was launched on 22 June 1967. Originally the pennant numbers allocated were in a "3100" series, but the later boats were numbered in a two figure run as shown above.

A photograph of *Sri Kedah* appears in the 1963-64 to 1965-66 editions, of *Sri Pahang* in the 1964-65 and 1965-66 editions, and of *Sri Perak* in the 1964-65 to 1966-67 editions.



SRI SARAWAK 1967, Wright & Logan

SEAWARD DEFENCE BOAT

SDML 3502 (ex-*Sri Trengganu*, ex-SDML 3502)

Displacement, tons	46 standard; 54 full load
Dimensions, feet	72 oa x 16 x 5.5
Guns	2—20 mm AA
Main engines	2 Gardner diesels; 2 shafts; 320 bhp = 12 knots

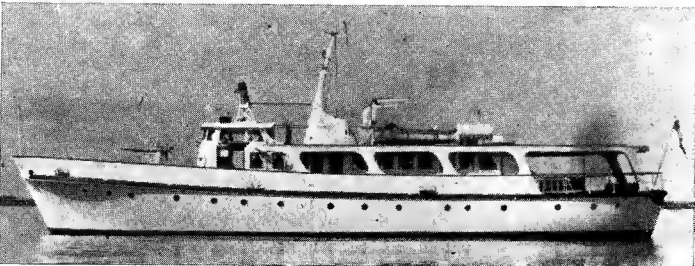
Former British harbour defence motor launch (HDML) later known as seaward defence motor launch (SDML). Of the original seven craft of this type *Sri Kedah* (ex-SDML 3501) was scrapped in 1959, and *Sri Selangor* (ex-SDML 1509) in 1961, SDML 3505 (ex-*Sri Pahang*, ex-SDML 3505) and SDML 3508 (ex-*Sri Kelantan*, ex-SDML 3508) in 1965. SDML 3506 (ex-*Sri Negri Sembilan*, ex-SDML 3506) and SDML 3507 (ex-*Sri Perak*, ex-SDML 3507) were offered for sale in 1966. These motor launches all reverted to their numbers in turn as the new patrol craft (see above) took their names. TRANSFER. The training tender *Panglima* P 48 was transferred to the Singapore Government in 1967.

DESPATCH AND SURVEY VESSEL

MUTIARA P 3504

Displacement, tons	95
Dimensions, feet	98 oa x 19 x 5.5
Guns	1—20 mm AA
Main engines	2 Thornycroft diesels; 200 bhp = 12 knots
Complement	16 (2 officers and 14 ratings)

A general purpose vessel intended for despatch, surveying and patrol duties. Designed and built at the Singapore shipyard of John I Thornycroft & Co, Ltd. First vessel specially constructed for the Royal Malaysian Navy, the earlier ships having been acquired from the Royal Navy. Launched on 17 Jan 1961. Named on 20 May 1961 and commissioned as KD *Mutiara* (meaning Pearl).



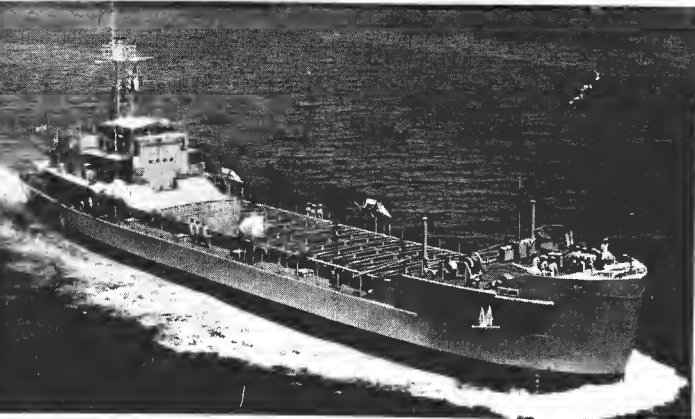
MUTIARA 1962, Royal Malaysian Navy, Official

TANK LANDING CRAFT

SRI LANGKAWI (ex-HMS *Counterguard*, ex-LCT (8) 4043)

Displacement, tons	657 light; 1 000 loaded
Dimensions, feet	225 pp; 231.2 oa x 39 x 3.8 fore; (5 aft)
Main engines	4 Paxman diesels; 1 840 bhp = 12.6 knots
Complement	37

Former British tank landing craft of the LCT (8) type. Acquired by the Royal Malaysian Navy in 1965 and refitted in Malta for tropical service.



SRI LANGKAWI 1966, Royal Malaysian Navy, Official

MINOR LANDING CRAFT. Five LCM (6) 55.5 tons, 56 feet overall, 2—20 mm guns, 2 diesels, 460 bhp = 9 knots, were built in Australia in 1965-66. Fifteen LCP, 18.5 tons, 48 feet overall, 14 feet beam machine guns, 2 Cummins 400 bhp = 16 knots were built to an Australian design in 1965-66.

DISPOSALS

The landing craft *Sri Perlis* (ex-HMS *Pelandok*, ex-LGC(L) 450), and the trawler type controlled minelayer *Sri Johor* (ex-HMS *Penyu*, ex-HMS *Dabchick*, ex-*Thorney*, were paid off in 1959 and sold. The maintenance repair craft MRC 1401 (ex-*Sri Melaka*, ex-HMMS *Malaya*, ex-MRC 1401, ex-LCT (E) 341) was scrapped in 1967.

MEXICO

Administration

Secretary of the Navy:
Admiral Antonio Vazquez del Mercado

Under-Secretary of the Navy:
Vice-Admiral Antonio J. Aznar Zetina

Commander-in-Chief of the Navy:
Vice-Admiral C. G. Enrique Altamirano Dominguez

Chief of the Naval Staff:
Rear Admiral Federico Romero Ceballos

Director of Services:
Rear-Admiral Jesus Beltran Ramirez

Personnel

1967: Total 11 100 (2,300 officers and 8 000 men including marines)

Strength of the Fleet

8 Frigates and Gunboats
22 Escorts and Minesweepers
8 Patrol Boats and Launches
4 Support Ships and Auxiliaries

Mercantile Marine

Lloyd's Register of Shipping:
95 vessels of 305 838 tons gross

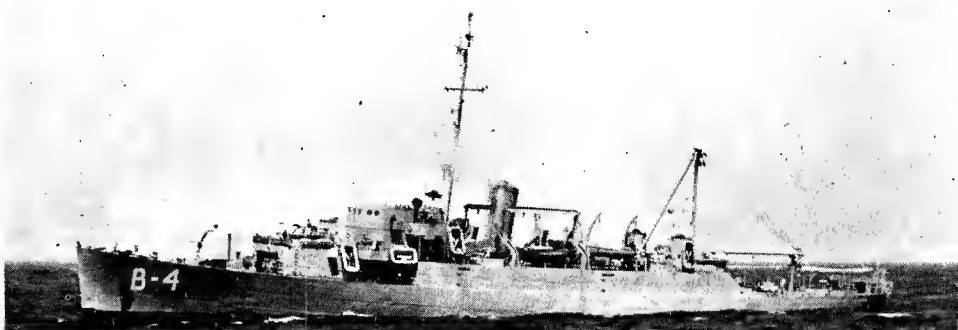
FRIGATES

Name	No.	Builders	Laid down	Launched	Completed
CALIFORNIA (ex-USS Belet, APD 109, ex-DE 599)	B 3 (ex-H 3)	Bethlehem SB Co, Hingham	26 June 1944	3 Mar 1944	15 June 1945
PAPALOAPAN (ex-USS Earhart, APD 113, ex-DE 603)	8 4 (ex-H 4)	Bethlehem SB Co, Hingham	20 Mar 1945	12 May 1945	26 July 1945
TEHUANTEPEC (ex-USS Joseph M. Auman, APD 117, ex-DE 74)	8 5 (ex-H 5)	Consolidated Steel Co, Orange	8 Nov 1943	5 Feb 1944	25 Apr 1945
USUMACINTA (ex-USS Don O. Woods, APD 118, ex-DE 721)	B 6 (ex-H 6)	Consolidated Steel Co, Orange	1 Dec 1943	19 Feb 1944	28 May 1945

4 Ex-U.S. "Rudderow" Class
Rated as *Fragatas Transportes*

Displacement, tons 1 400 standard; 2 130 full load
Length, feet (metres) 300 (91.5) wl; 306 (93.3) oa
Beam, feet (metres) 37 (11.3)
Draught, feet (metres) 12.7 (3.9)
Guns, dual purpose 1—5 in (127 mm) 38 cal.
Guns, AA 6—40 mm, 3 twin; 6—20 mm
Boilers 2 Foster Wheeler "D" with super-heater; 475 psi (33.4 kg/cm²); 750°F (399°C)
Main engines GE turbo-electric
12 000 shp; 2 shafts
Speed, knots 23.6; 13 economical sea
Radius, miles 5 500 at 15 knots
Oil fuel (tons) 350
Complement 204 plus 162 troops

Former US converted destroyer escorts rated as high speed transports (APD) in the US Navy. Purchased by Mexico in May and June 1964. They replaced the four ex-US "Tacoma" type frigates bearing the same names, which were stricken in June and Aug 1964.



PAPALOAPAN

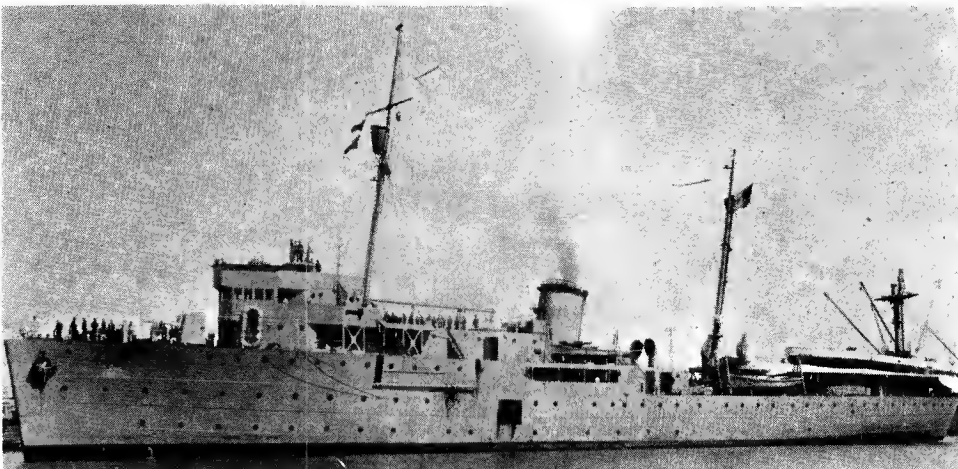
1966, Mexican Navy, Official

1 "Durango" Type
Rated as *Transporte de Guerra*

Displacement, tons 1 600 standard; 2 000 full load
Length, feet (metres) 282 (86.0) pp; 303 (92.4) oa
Beam, feet (metres) 40 (12.2)
Draught, feet (metres) 10 (3.1)
Guns, surface 2—4 in (102 mm);
2—2.24 in (57 mm)
Guns, AA 2—25 mm, twin; 4—20 mm
Main engines 2 Enterprise DMR-38 diesels,
5 000 bhp; electric drive; 2 shafts
Speed, knots 18 max, 12 sea (cruising)
Radius, miles 3 000 at 12 knots
Oil fuel (tons) 140
Complement 149 (24 officers and 125 men)

Originally designed primarily as an armed transport with accommodation for 20 officers, 450 men and 80 horses. The two Yarrow boilers and Parsons geared turbines of 6 500 shp installed when first built were replaced in 1967 with two 2 500 bhp diesels. Carries a lighter armament than the three cañoneros of the "Guanajuato" class (see below) which besides their troop carrying and transport capacity are equivalent to frigates in many ways. *Durango* replaced *Zaragoza* as a training ship in Mar 1964.

Name	No.	Builders	Launched	Completed
DURANGO	8—1 (ex-128)	Union Naval de Levante, Valencia	28 June 1935	1936



DURANGO

1966, Mexican Navy, Official

3 "Guanajuato" Class
Rated as *Cañoneros* (Gunboats)

Displacement, tons 1 300 standard; 1 950 full load,
Length, feet (metres) 264 (80.5) oa
Beam, feet (metres) 37.8 (11.5)
Draught, feet (metres) 10 (3.0)
Guns, surface 3—4 in (102 mm) singles
Guns, AA 6—20 mm, singles
Main engines 2 Enterprise DMR-38 diesels
5 000 bhp; 2 shafts
Speed, knots 14
Oil fuel (tons) 140
Complement 140 (20 officers and 120 men)

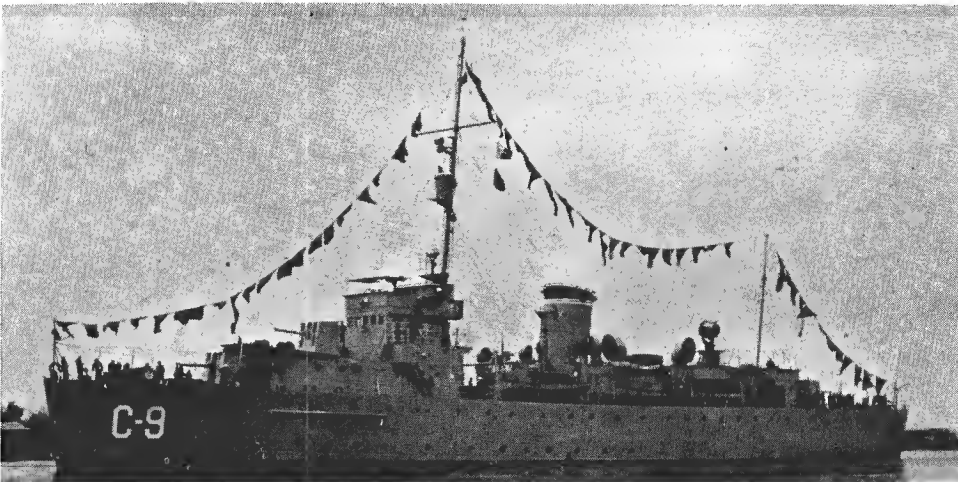
Officially classified as gunboats (cañoneros), but can be used as transports with berths for 120 troops.

ENGINEERING. The Parsons geared turbines (2 shafts, 5 000 shp = 19 knots) and Yarrow boilers installed when originally built in 1934 were replaced with two diesels each of 2 500 bhp: *Querétaro* in 1958, *Potosí* in 1961, and *Guanajuato* in 1964.

PENNANTS. Former pennant numbers: *Querétaro* H 9 (ex-43); *Potosí* H 8 (ex-44).

PHOTOGRAPHS. A photograph of *Querétaro* appears in the 1964-65 and 1965-66 editions.

Name	No.	Builders	Launched
GUANAJUATO	C-7	Sociedad Espanol de Construction Naval, Ferrol	29 May 1934
POTOSI	C-9	Sociedad Espanol de Construction Naval, Motagorda, Cadiz	24 Aug 1934
QUERETARO	C-8	Sociedad Espanol de Construction Naval, Ferrol	29 June 1934



POTOSI

1966, Mexican Navy, Official

ESCORT MINESWEEPERS

20 Ex-U.S. MSF Type (Rated as *Dragaminas*)

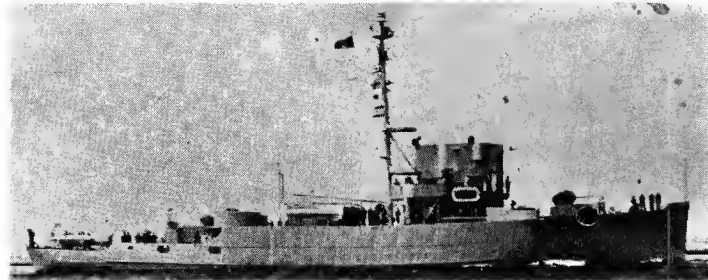
Name	No.	Ex-US Name & No.	Name	No.	Ex-US Name & No.
DM-01	D-1	Jubilant 255	DM-11	E-1	Device 220
DM-02	D-2	Hilarity 241	DM-12	E-2	Ransom 283
DM-03	D-3	Execute 232	DM-13	E-3	Knave 256
DM-04	D-4	Facility 233	DM-14	E-4	Rebel 284
DM-05	D-5	Scuffle 298	DM-15	E-5	Crag 214
DM-06	D-6	Eager 224	DM-16	E-6	Dour 223
DM-07	D-7	Recruit 285	DM-17	E-7	Diploma 221
DM-08	D-8	Success 310	DM-18	E-8	Invade 254
DM-09	D-9	Scout 296	DM-19	E-9	Intrigue 253
DM-10	D-0	Instill 252	DM-20	E-0	Harlequin 365

Displacement, tons	650 standard; 945 full load
Displacement, feet	180 wl; 184.5 oa x 33 x 10
Guns	1—3 in, 50 cal dp; 4—40 mm AA
Main engines	2 diesels; 2 shafts; 1 710 bhp = 15 knots
Complement	104

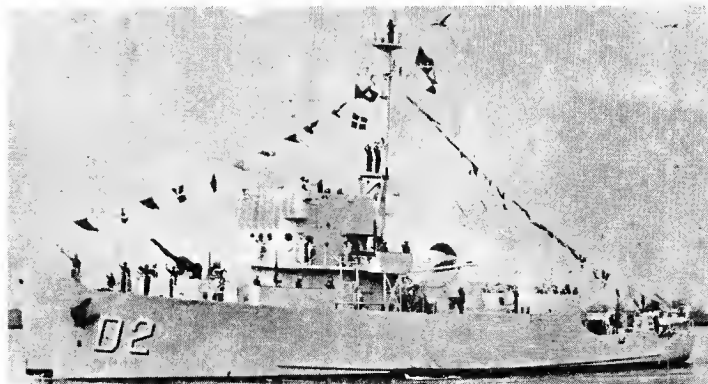
Former US steel-hulled "180-ft" fleet minesweepers of the "Admirable" class, MSF, ex-AM type. All completed in 1943-44. Transferred at Orange, Texas, on 2 Oct 1962. Of the twenty vessels ten are designated *dragaminas* for minesweeping duties, with D pennant numbers, and ten are designated *escoltas* for escort and general purpose duties with E pennant numbers.



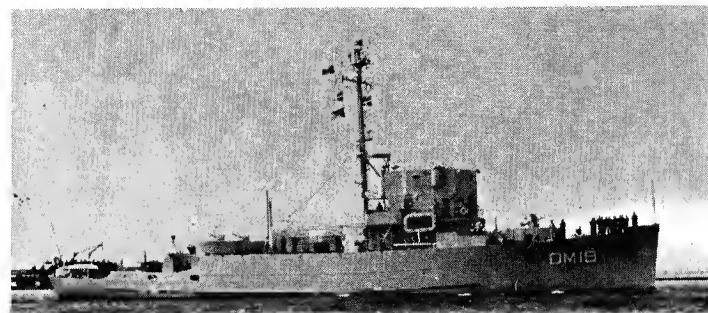
DM 11 1966, Mexican Navy, Official



DM 16 1966, Mexican Navy, Official



DM 02 Mexican Navy, Official



DM 19 Mexican Navy, Official

ESCORT

1 Ex-U.S. PCE Type (Rated as *Corbeta*)

TOMAS MARIN (ex-PCE 875) C 3	
Displacement, tons	600 standard; 903 full load
Dimensions, feet	180 wl; 184.5 oa x 33.1 x 9.5
Guns	1—3 in, 50 cal; 6—40 mm AA (3 twin); 4—20 mm AA (single)
A/S weapons	2 DCT
Main engines	GM diesel; 2 shafts; 1 800 bhp = 16 knots designed (15 knots sea speed)
Complement	80

Sole survivor of five former United States patrol vessels of the PCE type, all completed in 1943-44 and purchased from the United States Navy in 1947.

Sister ships *Blass Godínez* (ex-PCE 871) C 2, *David Porter* (ex-PCE 847) C 4, *Pedro Sainz de Baranda* (ex-PCE 844) C 1, and *Virgilio Uribe* (ex-PCE 868) C 5 were scrapped in 1965.



TOMAS MARIN 1966, Mexican Navy, Official

PATROL VESSELS

1 Ex-U.S. PC Type (Rated as *Guardacostas*)

GC 38 (ex-USS PC 1210) G 8	
Displacement, tons	280 standard; 450 full load
Dimensions, feet	170 wl; 173.7 oa x 23 x 11
Guns	1—3 in; 2—20 mm AA
A/S weapons	4 DCT
Main engines	2 diesels; 2 shafts; 2 880 bhp = 19 knots
Oil fuel, tons	60
Radius, miles	5 000 at 10 knots
Complement	65

Sole survivor of nine former United States submarine chasers of the "173-ft" steel PC type, launched in 1942-44, completed in the USA in 1942-45, and purchased as surplus in the United States in 1952. Cruising speed 10 knots. A photograph of GC 30 appears in the 1953-54 to 1963-64 editions.

DISPOSALS
Of this class GC 31 (ex-USS PC 820), GC 32 (ex-USS PC 608), GC 34 (ex-USS PC 794) and GC 36 (ex-USS PC 1224) were officially deleted from the list in Mar 1964 for scrapping, and GC 30 (ex-USS PC 820), GC 33 (ex-USS PC 813), GC 35 (ex-USS PC 824) and GC 37 (ex-USS PC 819) were scrapped in 1966. Of the nine patrol vessels of the "G 20" class, G 29 was scrapped in 1952, G 20, G 21, G 23, G 26 and G 27 in 1954, G 22 and G 35 in 1956, and G 28 in 1966.



GC 35 1964, Official

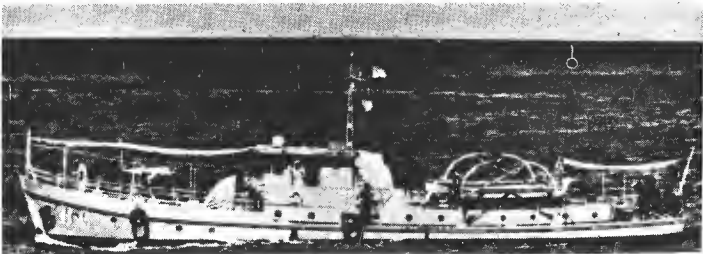
PATROL BOATS

2 "Azueta" Class

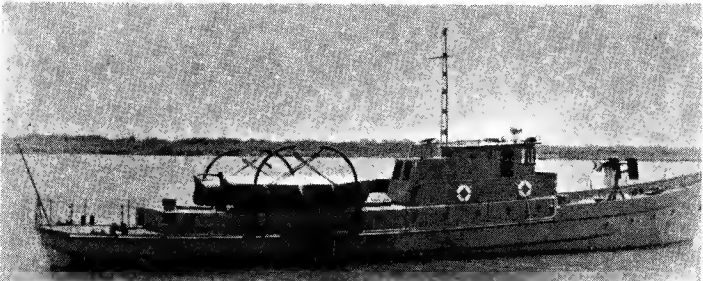
AZUETA G 9

Displacement, tons 80 standard
Dimensions, feet 85 x 16 x 7
Guns 2—13.2 mm AA (twin)
Main engines Superior motors; 600 bhp = 12 knots

Small patrol craft of all steel construction built at Astilleros de Tampico in 1959 and 1960, respectively.



VILLAPANDO 1966, Mexican Navy, Official



AZUETA Mexican Navy, Official

POLIMAR G 1

Displacement, tons 57 standard
Dimensions, feet 67
Main engines 2 diesels; 456 bhp = 16 knots

Small patrol craft of steel construction built at Astilleros de Tampico in 1961. Entered service on 1 Oct 1962.

5 River Type

AM 4 AM 5 AM 6 AM 7 AM 8

Displacement, tons 35
Main engines Diesel; speed = 10 knots

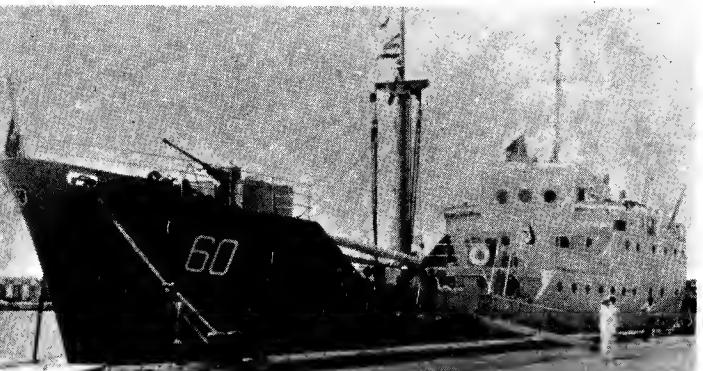
River patrol craft of steel construction. Built in Tampico and Veracruz. Entered service from 1960 to 1962.

TRANSPORT

ZACATECAS B 2

Displacement, tons 780 standard
Dimensions, feet 158 x 27.2 x 9
Guns 1—40 mm AA; 2—20 mm AA (single)
Main engines 1 MAN diesel; 560 hp = 10 knots
Complement 50 (13 officers and 37 men)

Built at Ulua Shipyard, Veracruz. Launched in 1959. Cargo ship type. The hull is of welded steel construction.



ZACATECAS 1966, Mexican Navy, Official

DISPOSALS

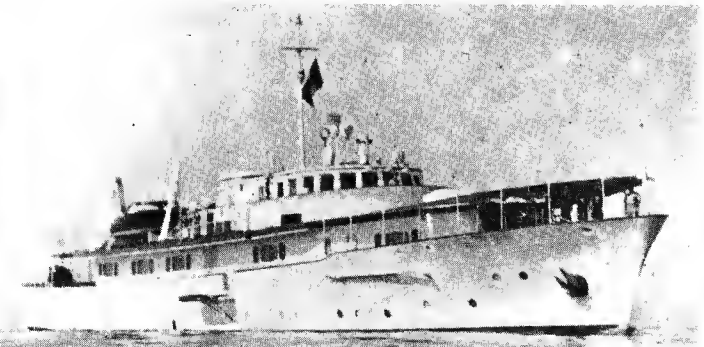
The training ship *Zaragoza* (ex-*Orizaba*, ex-*Southern Cross*, ex-*Rover*), former Presidential Yacht, was officially stricken from the Navy List for disposal in Mar 1964, and was replaced as Training Ship by the frigate transport *Durango*. The six landing craft of the US LCT (LCU) type were officially deleted from the Navy List in 1966. The auxiliary ocean tug of the US "Maricopa" class, *Sotayomo* (ex-USS ATA 121), loaned to Mexico under MAP, was removed from the list in 1966, as were *Nereida*, former patrol boat adapted as a tug and fire fighting craft, and three small tugs.

SURVEY SHIP

SOTAVENTO A 1

Displacement, tons 300 standard; 400 full load
Dimensions, feet 165.5 x 28 x 10
Main engines Diesels; 1 800 bhp = 17 knots

Built by Higgins, New Orleans. Launched in 1947. Handsome, symmetrical and low-lying. Streamlined, with truncated funnel. Air conditioned and equipped with radar. Formerly the Presidential Yacht, but officially reclassified as *Buque Hidrografico* in 1966.



SOTAVENTO 1967, Mexican Navy, Official

OILERS

1 Ex-U.S. YOG Type

AGUASCALIENTES (ex-YOG 6) 1 5

Displacement, tons 440; 1 480 full load
Dimensions, feet 174.5 oa x 33 x 11.8 max
Main engines Union diesel direct; 500 bhp = 8 knots
Capacity 6 570 barrels
Complement 26 (5 officers and 21 ratings)

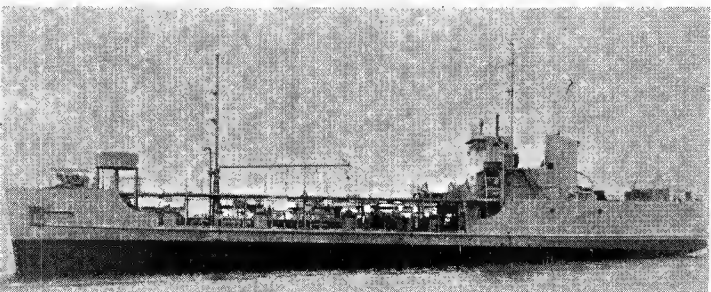
Former United States self-propelled fuel oil barge, district craft. Built by Geo. H. Mathis Co Ltd, Camden, N.J. in 1943. Purchased by Mexico in 1964. Entered service in Nov 1964.

1 Ex-U.S. YO Type

TLAXCALA (ex-YO 107) 1 6

Displacement, tons 440; 1 800 full load
Dimensions, feet 174.5 oa x 33 x 11.8 max
Main engines Union diesel direct bhp; 500 = 8 knots
Capacity 6 570 barrels
Complement 26 (5 officers and 21 ratings)

Former United States self-propelled fuel oil barge, district craft. Built by Geo. Lawler & Son, Neponset, Mass, in 1943. Transferred by sale in 1964 by US. Entered service in Nov 1964.



TLAXCALA 1966, Mexican Navy, Official

MAURITANIA
PATROL BOAT

IM RAQ'NI (ex-VC 7, P 757)

Displacement, tons 75 standard; 82 full load
Dimensions, feet 104.3 x 15.4 x 5.5
Guns 2—20 mm AA
Main engines 2 Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots
Radius, miles 1 500 at 15 knots
Complement 15

Built by construction Mécaniques de Normandie, Cherbourg. Launched on 10 Dec 1957. Transferred from France in 1966.

NATO

North Atlantic Treaty Organisation (NATO) Naval Forces are:—

BELGIUM, CANADA, DENMARK, GERMAN FEDERAL REPUBLIC, GREECE, ICELAND, ITALY, NETHERLANDS, NORWAY, PORTUGAL, TURKEY, UNITED KINGDOM, UNITED STATES. (France withdrew from NATO on 1 July 1966.)

MOROCCO

FRIGATES

Name	Builders	Laid down	Launched	Completed
AL MOUNA (ex- <i>La Surprise</i> , ex-HMS <i>Torrige</i>)	Blyth Dry Docks & Ship building Co	17 Oct 1942	16 Aug 1943	6 Apr 1944

Displacement, tons	1 450 standard; 2 150 full load
Length, feet (metres)	283 (86.3) pp; 301.3 (91.8) oa
Beam, feet (metres)	36.5 (11.1)
Draught, feet (metres)	12.5 (3.8)
Guns, surface	2—4.1 in (105 mm)
Guns, AA	3—40 mm; 6—20 mm
A/S	1 Hedgehog; 4 DCT; 2 DC racks
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion
	5 500 ihp; 2 shafts
Speed, knots	18
Radius, miles	7 700 at 12 knots
Oil fuel (tons)	645
Complement	123 (10 officers, 113 men)



AL MOUNA (before conversion)

Wright & Logan

CORVETTE (Aviso)

EL LAHIQ (ex-*Chamois*, ex-*Annamite*)

Displacement, tons	647 standard; 920 full load
Dimensions, feet	257 × 28.5 × 10.5
Guns	2—4.1 in; 1—40 mm AA; 4—20 mm AA
Main engines	Sulzer diesels; 2 shafts; 4 000 bhp = 20 knots
Oil fuel, tons	100
Radius, miles	10 000 at 9 knots; 5 200 at 15 knots
Complement	81 (6 officers, 75 men)

Former French *aviso* of the early "Chamois" class. Built as *Annamite* by Lorient Dockyard. Laid down in Apr 1938, launched on 17 June 1939, completed in Feb 1940. Renamed *Chamois* in 1953. Transferred on 7 Nov 1961 and renamed *El Lahiq*. Sister ship of *Dustur* (ex-*Chevreuil*) in the Tunisian Navy. The patrol vessel *Agadir* (ex-French *Gaumier*, ex-USS *PC 545*) was returned to France on 19 Aug 1964 and became Q 390. Sold for scrap at Brest on 15 Nov 1965.



EL LAHIQ (before transfer)

French Navy, Official

SEAWARD PATROL CRAFT (Vedette de Port)

ES SABIQ (ex-P 762, VC 12)

Displacement, tons	75 standard; B2 full load
Dimensions, feet	104.5 × 15.5 × 5.5
Guns	2—20 mm AA
Main engines	Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots
Radius, miles	1 500 at 15 knots
Complement	17

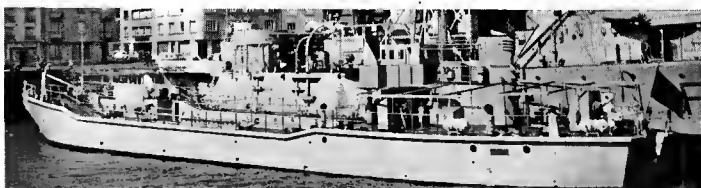
Former French seaward defence motor launch of the VC type. Built by Chantiers Navals d'Estérel. Launched on 13 Aug 1957. Completed in 1958. Transferred from the French Navy to the Moroccan Navy on 15 Nov 1960 and renamed *Es Sabiq*.

UTILITY LANDING CRAFT

LIEUTENANT MALGHAGH

Displacement, tons	292 light; 642 full load
Dimensions, feet	193.5 × 39.2 × 4.5
Guns	2—20 mm AA
Main engines	2 MGO diesels; 2 shafts; 1 000 bhp = 8 knots
Complement	16

Ordered early in 1963 from the Chantiers Navals Franco-Belges and completed in 1964. Similar to the French landing craft of the EDIC type built at the same yard.



LIEUTENANT MALGHAGH

1965, courtesy Admiral M. Adam

PATROL VESSELS (Escorteur Cotier)

1 New Construction

Displacement, tons	125 light; 154 full load
Dimensions, feet	124.7 pp; 133.2 oa × 20.8 × 4.7
Guns	AA and MG
Main engines	2 SEMT-Pielstick diesels; 2 shafts; 3 600 bhp = 25 knots
Oil fuel, tons	21
Radius, miles	2 000 at 15 knots

Ordered in 1964 from Constructions Mécaniques de Normandie, Cherbourg, but laying down postponed pending review of design.

LIEUTENANT RIFFI

Displacement, tons	325 standard; 374 full load
Dimensions, feet	170 wl; 173.8 oa × 23 × 6.3
Guns	1—3 in dp; 2—40 mm AA
A/S weapons	2 ASM mortars; 1 DC rack
Main engines	SEMT-Pielstick diesels; 2 shafts; 3 600 bhp = 19 knots
Radius, miles	3 000 at 12 knots; 2 000 at 15 knots
Complement	59 (4 officers, 55 men)

Of modified "Fougueux" design. Built by Constructions Mécaniques de Normandie, Cherbourg. Laid down in May 1963. Launched on 1 Mar 1964. Completed in May 1964. Controllable pitch propellers.

MADAGASCAR

(MALAGASY REPUBLIC)

The *République Malgache* became an independent state on 26 June 1960.

PATROL VESSELS

1 New Construction

Displacement, tons	235 light
Dimensions, feet	155.8 oa × 21
Main engines	2 MGO diesels

Ordered by the French Navy to be built by Chantiers Navals Franco-Belges for delivery to Madagascar. Patrol craft similar to seaward defence boat.

TANAMASOANDRO (ex-*Marjolaine*, ex-D 337, ex-YMS 69)

Displacement, tons	280 standard; 325 full load
Dimensions, feet	134.5 × 24.2 × 12
Guns	1—3 in, dp 2—20 mm AA; 2 MG
Main engines	2 diesels; 2 shafts; 1 000 bhp = 15 knots
Oil fuels, ton	36
Radius, miles	3 000 at 10 knots

Former French patrol vessel, ex-coastal minesweeper of the US YMS type, transferred from the French Navy to the new Malgache Navy at Diego Suarez on 18 Feb 1961 and name changed from *Marjolaine* to *Tanamasoandro* (which means Sunray).

MAILAKA (ex-P 758, VC 8)

Displacement, tons	75 standard; 82 full load
Dimensions, feet	104.2 × 15.5 × 5.5
Guns	2—20 mm AA
Main engines	Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots
Radius, miles	1 500 at 15 knots
Complement	15

Former French seaward defence motor launch of the VC Type. Built by the Constructions Mécaniques de Normandie, Cherbourg. Launched on 21 Jan 1958. Completed in 1959. Transferred from the French Navy to the Malgache Navy in 1963.

RICHELIEU

Trawler purchased for conversion to Coast Guard and training ship. 691 tons gross. Built in 1959 by A. G. Weser, Bremen, Germany.

JASMINE

Former coastal minesweeper of the YMS type acquired from France on 19 Aug 1965 as a light tender. Same type originally as *Tanamasoandro* above.

ROYAL NETHERLANDS NAVY

Administration

Minister of Defence:
P. J. S. de Jong

Secretary of State for Defence (Navy):
A. Van Es

*Chief of the Naval Staff and
Commander-in-Chief:*
Vice-Admiral A. H. J. van der Schatte
Olivier

Diplomatic Representation

Naval Attaché in London:
Captain B. ter Brake

Naval Attaché in Washington:
Rear-Admiral R. W. Count van Lynden

Ships

Warships are painted greyish blue except submarines, which are black overall. Ships of The Royal Netherlands Navy are referred to by the prefix "Hr. Ms."

Strength of the Fleet

- 1 Aircraft Carrier (Light Fleet Type)
- 6 Submarines (Diesel Powered)
- 2 Cruisers (1 Guided Missile Armed)
- 12 Destroyers (Anti-Submarine Type)
- 6 Frigates (General Purpose Type)
- 6 Frigates (Destroyer Escort Type)
- 6 Corvettes (Patrol Escort Type)
- 6 Escorts (ex-Ocean Minesweepers)
- 5 Patrol Vessels (Submarine Chasers)
- 46 Coastal Minesweepers (Non-Magnetic)
- 16 Inshore Minesweepers (Wooden)
- 40 Support Ships and Service Craft

New Construction Programme

6 frigates of the British "Leander" class design powered by steam turbines;

1 nuclear powered submarine, hunter-killer type;

2 conventional submarines, ocean-going type.

Personnel

1 January 1967: 20,800 officers and ratings (including 2,000 officers and ratings of the Navy Air Arm, 2,200 officers and men of the Royal Marine Corps and 255 officers and women of the W.R.N.L.N.S.)

Navy Estimates

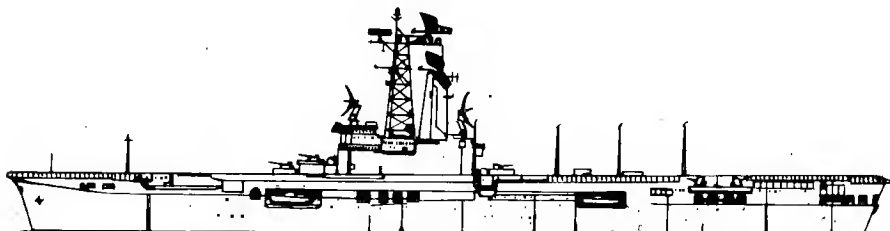
1956: Fl. 342,312,000	1962: Fl. 503,960,000
1957: Fl. 352,770,000	1963: Fl. 544,805,000
1958: Fl. 363,793,000	1964: Fl. 556,753,000
1959: Fl. 360,609,000	1965: Fl. 621,109,000
1960: Fl. 380,779,000	1966: Fl. 578,524,700
1961: Fl. 430,880,000	1967: Fl. 600,000,000

Mercantile Marine

Lloyd's Register of Shipping:
1,770 vessels of 4,979,950 tons gross

Silhouettes

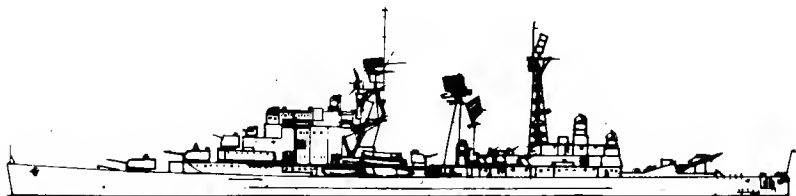
Scale: 150 feet = 1 inch



KAREL DOORMAN



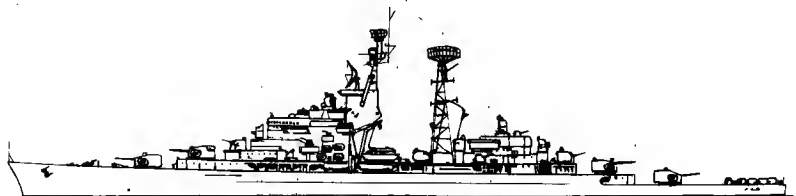
VAN SPEIK



DE ZEVEN PROVINCIE



FRIESLAND Class



DE RUYTER



HOLLAND Class



VAN AMSTEL Class



WOLFF Class



SNELLIUS Class

AIRCRAFT CARRIER (Vliegkampschip)

Name	Deck Letter	No.	Builders	Laid down	Launched	Completed
KAREL DOORMAN (ex-HMS Venerable)	D	R 81	Cammell Laird & Co Ltd Birkenhead	3 Dec 1942	30 Dec 1943	17 Jan 1945

1 Ex-British "Colossus" Class

Displacement, tons	15 892 standard; 19 896 full load
Length, feet (metres)	630 (192.0) pp 693.2 (211.3) oa
Beam, feet (metres)	80 (24.4)
Draught, feet (metres)	25 (7.6)
Width, feet (metres)	121.3 (37.0) overall
Hangar:	
Length, feet (metres)	455 (138.7)
Width, feet (metres)	52 (15.8)
Height, feet (metres)	17.5 (5.3)
Aircraft	Capacity 21. Official complement: 8 Tracker S2A's; 6 Seabat SH-34J helicopters
Guns, AA	10-40 mm
Guns, saluting	fitted
Boilers	4 three-drum type; working pressure 400 psi (28.1 kg/cm ²); Superheat 700°F (371°C)
Main engines	Parsons geared turbines 40 000 shp; 2 shafts
Speed, knots	24.25
Radius, miles	12 000 at 14 knots
Oil fuel (tons)	3 200
Complement	1 462

Purchased from Great Britain on 1 Apr 1948. Commissioned in the Royal Netherlands Navy on 28 May 1948. Insulated for tropical service and partly air-conditioned.

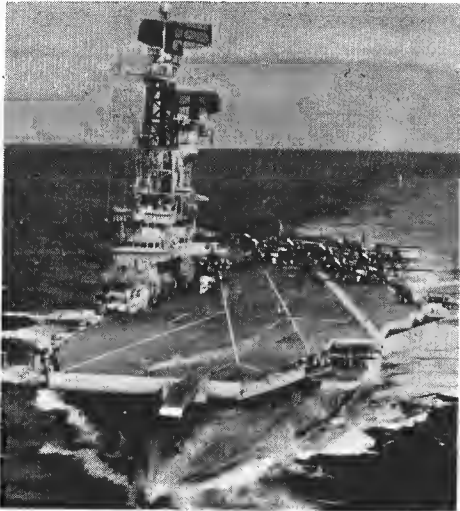
RECONSTRUCTION. Underwent modernisation in 1955-58, including angled flight deck and steam catapult, mirror sight landing system and new anti-aircraft battery of ten 40 mm guns, at the Wilton-Fijenoord Shipyard, at a cost of 25 million guilders. Conversion completed in July 1958.

ENGINEERING. Engines and boilers are arranged *en echelon*, the two propelling-machinery spaces having two boilers and one set of turbines in each space, on the unit system.

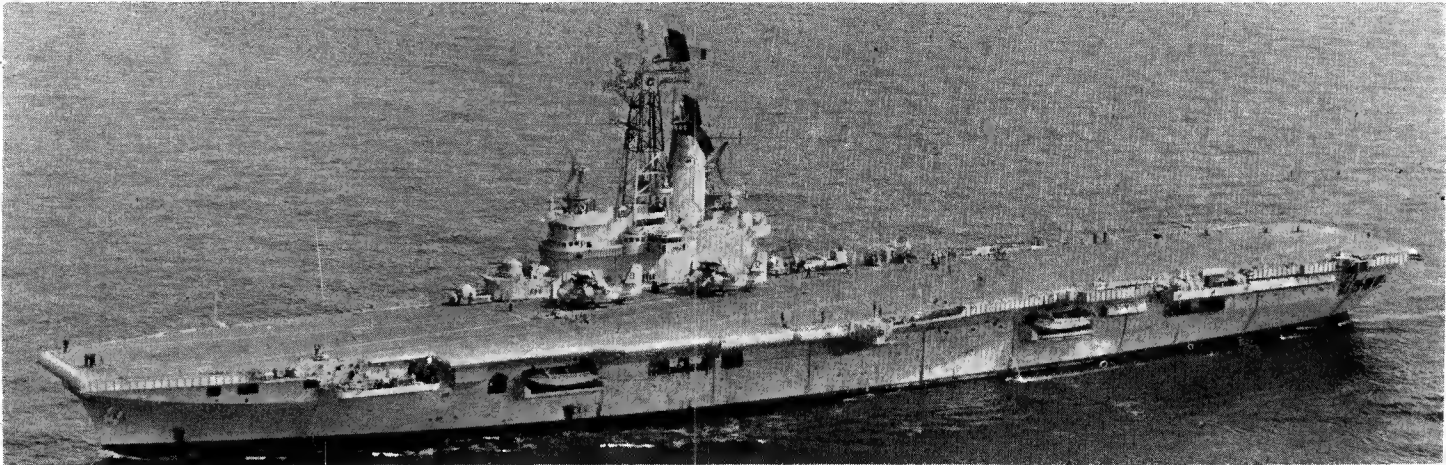
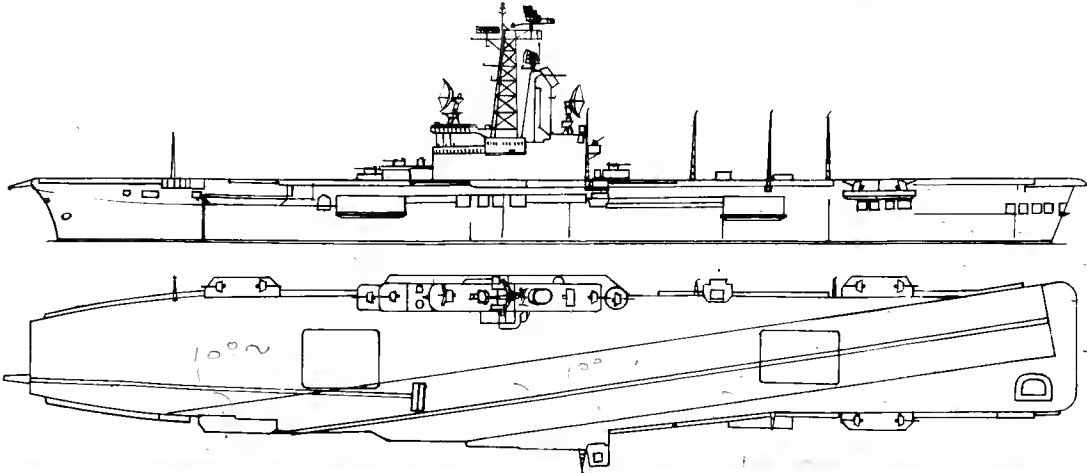
APPEARANCE. With a modified island and bridge, a lattice tripod radar mast, and a tall raked funnel, she differs considerably from her former appearance and from her original sister ships in the British, French, Argentine and Brazilian Navies.

PHOTOGRAPHS. An aerial counter view appears in the 1965-66 edition.

DRAWING. Port elevation and plan. Redrawn in 1966. Scale: 128 feet = 1 inch.



KAREL DOORMAN 1966, RNN Official



KAREL DOORMAN 1966 Skyfotos



KAREL DOORMAN 1965, Skyfotos

SUBMARINES (Onderzeeboten)

Name	No.	Builders	Laid down	Launched	Completed
POTVIS	S 804	Dok en Werf Mij Wilton-Fijenoord, Scheidam	17 Sep 1962	12 Jan 1965	2 Nov 1965
TONIJN	S 805	Dok en Werf Mij Wilton-Fijenoord, Scheidam	27 Nov 1962	14 June 1965	24 Feb 1966
DOLFIJN	S 808	Rotterdamse Droogdok Mij, Rotterdam	30 Dec 1954	20 May 1959	16 Dec 1960
ZEEHOND	S 809	Rotterdamse Droogdok Mij, Rotterdam	30 Dec 1954	20 Feb 1960	16 Mar 1961

2 "Potvis" Class. 2 "Dolfijn" Class

Displacement, tons	1 140 standard; 1 494 surface : 1 826 submerged
Length, feet (metres)	260.9 (79.5)
Beam, feet (metres)	25.8 (7.8)
Draught, feet (metres)	15.8 (4.8)
Torpedo tubes	8—21 in (533 mm)
Main engines	2 MAN diesels, total 3 100 bhp Electric motors, 4 200 hp; 2 shafts
Speed, knots	14.5 on surface; 17 submerged
Complement	64

These submarines are of a triple-hulled design. Maximum depth 980 feet (300 metres). Four new submarines were first voted for in 1949, but the contracts for *Potvis*, O 34 and *Tonijn*, O 35, were cancelled and their construction suspended pending a study of future requirements. The order was later replaced (see above). The four submarines are of the same design, but *Potvis* and *Tonijn* have several modifications compared with *Dolfijn* and *Zeehond* and are therefore officially considered to be a separate class.

CONSTRUCTION. The hull consists of three cylinders arranged in a triangular shape. The upper cylinder accommodates the crew, as well as navigational equipment and armament. The lower two cylinders house the propulsion machinery comprising diesel engines and electric motors. The three cylinders are fitted in a pressure-tight steel hull. See Frontispiece of the 1959-1960 edition for scale models—cutaway longitudinal section showing double decker roominess, and cross section showing triple hull permitting greater diving depth.

PHOTOGRAPHS. Of *Zeehond* appear in the 1963-64 to 1966-67 editions.

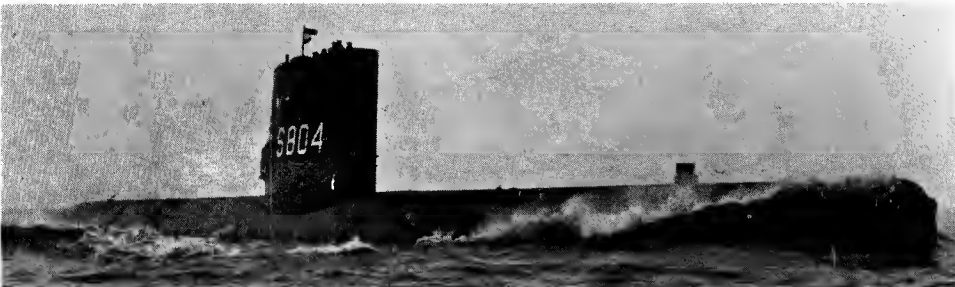
PROJECTED NUCLEAR POWERED TYPE. In the "defence note" issued in June 1964 the construction of nuclear powered submarines was announced. A first instalment for the construction of the first nuclear powered submarine was approved in the 1965 Navy Estimates. The cost is estimated to amount to £17 000 000.

New Construction

TIJGERHAAI ZWAARDVIS

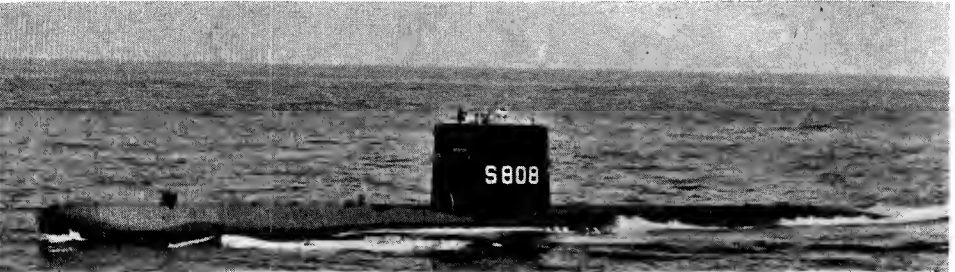
In the 1964 Navy Estimates a first instalment was approved for the construction of two conventionally powered submarines of single hull "teardrop" design planned to replace the two submarines of the "Walrus" class about 1970.

Ordered from Rotterdam DD Co on 24 Dec 1965 and laid down on 14 July 1966. Provisional specifications:—2 300 tons, 66 × 8.4 × 7.1 metres, six TT, crew 68.



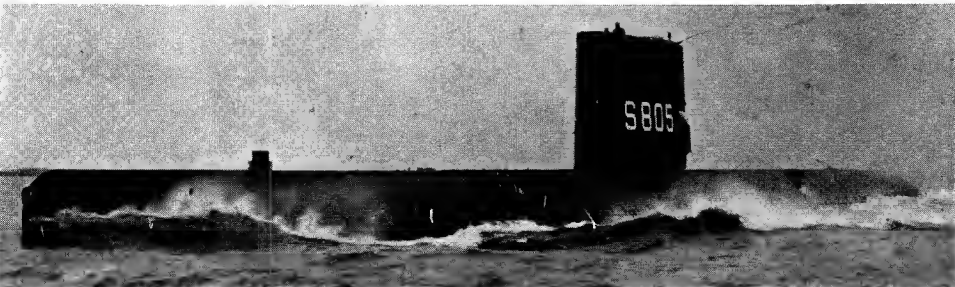
POTVIS

1966, Royal Netherlands Navy, Official



DOLFIJN

1966, Royal Netherlands Navy, Official



TONIJN

1967, Royal Netherlands Navy, Official

Name	No.	Builders	Laid down	Launched	Completed	Converted	Transferred
WALRUS (ex-Icefish)	S 802	Manitowoc SB Co, Wisconsin	1943	20 Feb 1944	19 June 1944	1952	21 Feb 1953
ZEELEEUW (ex-Hawkbill)	S 803	Manitowoc SB Co, Wisconsin	1943	9 Jan 1944	17 May 1944	1952	21 Apr 1953

2 "Walrus" Class

Displacement, tons	1 420 standard; 1 525 surface ; 2 425 submerged
Length, feet (metres)	309 (94.2) oa
Beam, feet (metres)	27 (8.2)
Draught, feet (metres)	17 (5.2)
Torpedo tubes	10—21 in (533 mm), 6 bow and 4 stern
Main engines	GM 2-stroke diesels, total 6 500 bhp; Electric motors, 2 700 hp
Speed, knots	20 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	79

Former "Balao" Class submarines, acquired on loan from the US Navy (for a period of five years, subsequently extended to ten years, and again later to fifteen years) after having been converted and streamlined with enclosed conning tower "fin". 24 torpedoes can be carried.

DISPOSALS OF "T" CLASS. Of the two submarines of the former British "T" class, *Zwaardvis* (ex-HMS *Talent*) was withdrawn from service on 15 Jan 1963 and scrapped in July 1963 and *Tijgerhaai* (ex-HMS *Tarn*) was deleted from the list in 1966.

DISPOSALS OF "O" CLASS. O 27 was stricken from the list in Dec 1959 and sold. O 24, removed from the list in 1956 and used for instruction until discarded in 1962, was sold for scrap in June 1963 and broken up at Flushing. O 21 was sold for scrap on 24 Jan 1958.



ZEELEEUW

1966, Royal Netherlands Navy, Official



WALRUS

1966, courtesy Godfrey H. Walker, Esq

CRUISERS (Kruisers)

Name	No.	Builders	Laid down	Launched	Completed
DE RUYTER (ex-Zeven Provinciën)	C 801	Wilton-Fijenoord, Schiedam	5 Sep 1939	24 Dec 1944	18 Nov 1953
DE ZEVEN PROVINCIEËN (ex-De Ruyter, ex-Eendracht, ex-Kijkduin)	C 802	Rotterdam Drydock Co	19 May 1939	22 Aug 1950	17 Dec 1953

Displacement, tons	9 529 standard ; 11 850 full load (C 802: 9 850 std, 12 250 load)
Length, feet (metres)	590.5 (180.0) pp ; C801: 614.5 (190.3) oa ; C802: 609 (188.7) oa
Beam, feet (metres)	56.7 (17.3)
Draught, feet (metres)	22 (6.7) max
Missiles, AA	De Zeven Provinciën (C802) only: 1 twin "Terrier" launcher aft
Guns, surface	C801: 8—6 in (152 mm) in twin turrets ; C802: 4—6 in (152 mm) in twin turrets
Guns, AA	C801: 8—57 mm in twin turrets ; 8—40 mm ; C802: 6—57 mm in twin turrets ; 4—40 mm
Boilers	4 Werkspoor-Yarrow
Main engines	2 De Schelde-Parsons geared turbines ; 85 000 shp ; 2 shafts
Speed, knots	32
Complement	De Ruyter: 926 De Zeven Provinciën: 940

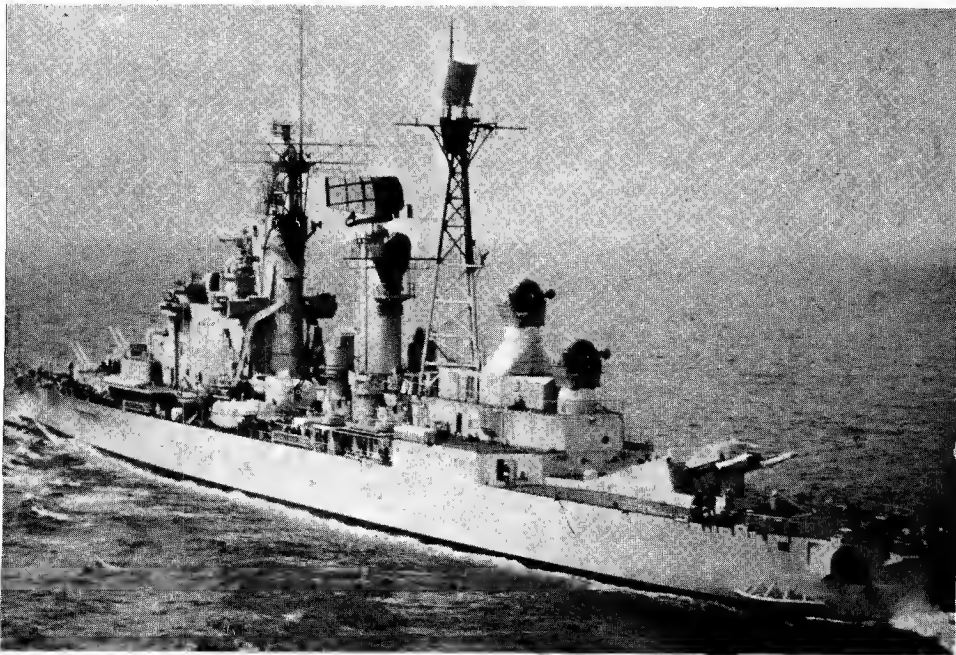
Machinery by K. M. de Schelde. Construction resumed in 1946. De Ruyter was launched by the Germans as the De Zeven Provinciën, but as the latter name was given to the former De Ruyter when she was launched on 22 Aug 1950, the war-launched ship took her sister's name in exchange. Tripod mast, originally abaft after funnel, is now before after funnel.

GUIDED MISSILE CONVERSION. De Zeven Provinciën has been rearmed with one twin launcher for "Terrier" guided missiles. Conversion by Rotterdamsche Droogdok Mij, Rotterdam. "Terrier" installation by NV Dok en Werf Mij Wilton-Fijenoord, Schiedam. Conversion commenced in 1962 and was completed at the end of 1964. De Ruyter will not be converted.

PHOTOGRAPHS. A photograph of De Zeven Provinciën before conversion appears in the 1961-62 to 1964-65 editions.

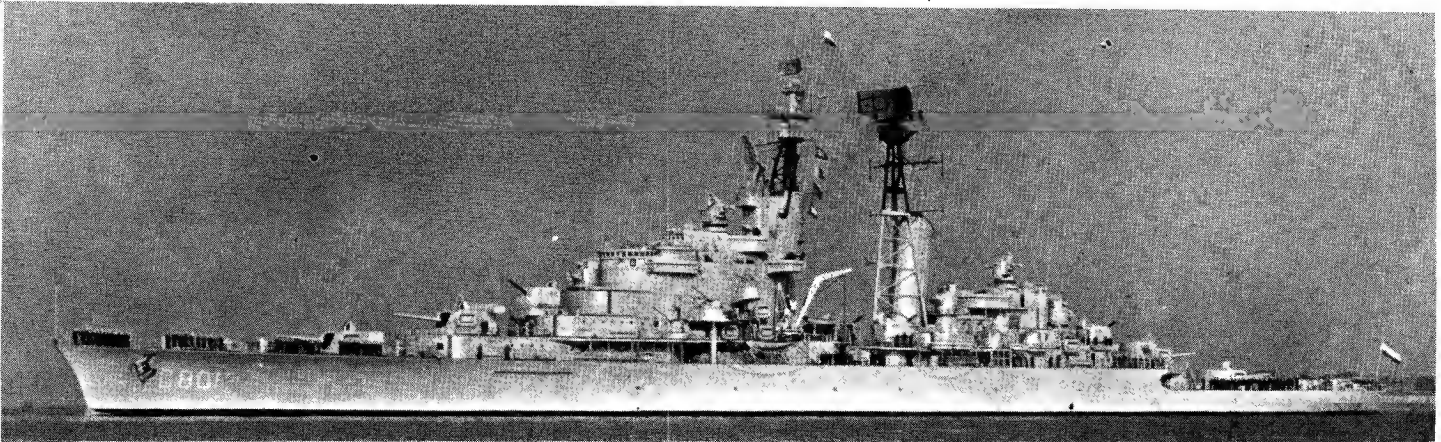
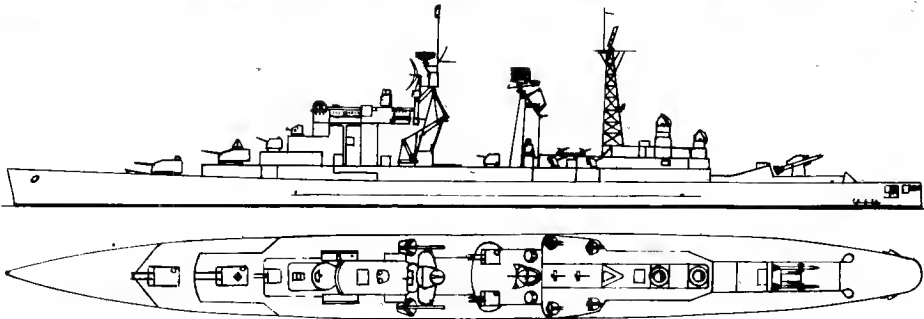
GUNNERY. Main armament has 60 degrees elevation. All guns are fully automatic and radar controlled. The 6 inch guns have a rate of fire of 15 rounds per minute.

DRAWING. Represents De Zeven Provinciën. Port elevation and plan. Drawn in 1966. De Ruyter has curved bow which accounts for the variation in overall length. Scale 128 feet = 1 inch. A port elevation and plan drawing of De Ruyter appears in the 1953-54 to 1965-66 editions.



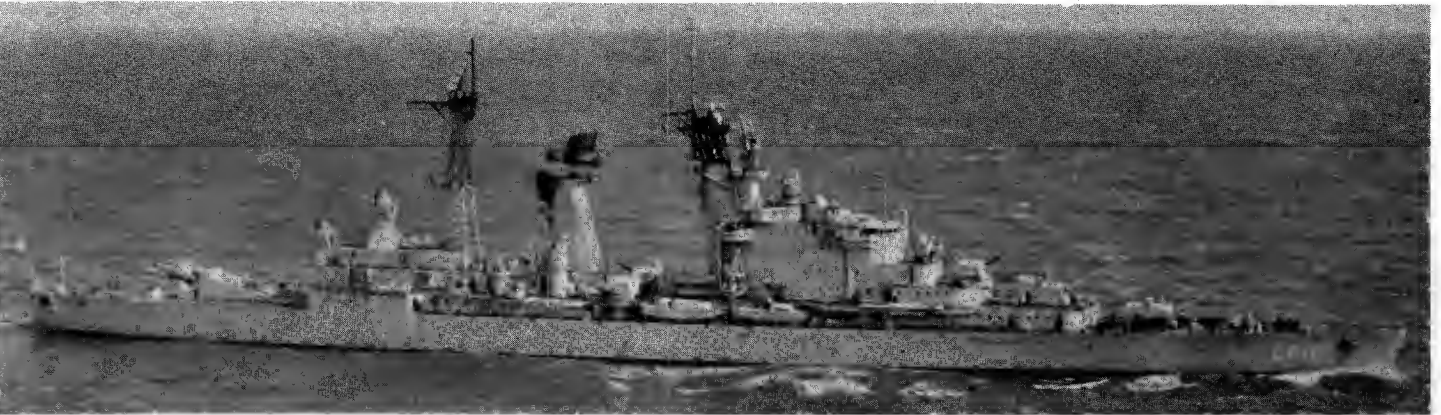
DE ZEVEN PROVINCIEËN

1965, Royal Netherlands Navy, Official



DE RUYTER

1966, Wright & Logan



DE ZEVEN PROVINCIEËN converted with guide missile launcher aft

1967, Royal Netherlands Navy, Official

ANTI-SUBMARINE DESTROYERS DDE (Onderzeebootjagers)

Name	No.	Builders	Laid down	Launched	Completed
FRIESLAND	D 812	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	17 Dec 1951	21 Feb 1953	22 Mar 1956
GRONINGEN	D 813	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	21 Feb 1952	9 Jan 1954	12 Sep 1956
LIMBURG	D 814	Koninklijke Maatschappij De Schelde, Flushing	28 Nov 1953	5 Sep 1955	31 Oct 1956
OVERIJSSSEL	D 815	Dok-en-Werfmaatschappij Wilton-Fijenoord	15 Oct 1953	8 Aug 1955	4 Oct 1957
DRENTHE	D 816	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	9 Jan 1954	26 Mar 1955	1 Aug 1957
UTRECHT	D 817	Koninklijke Maatschappij De Schelde, Flushing	15 Feb 1954	2 June 1956	1 Oct 1957
ROTTERDAM	D 818	Rotterdamse Droogdok Mij, Rotterdam	7 Jan 1954	26 Jan 1956	28 Feb 1957
AMSTERDAM	D 819	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	26 Mar 1955	25 Aug 1956	10 Aug 1958

8 "Friesland" Class

Displacement, tons	2 497 standard; 3 070 full load
Length, feet (metres)	370 (112.8) pp; 380.5 (116.0) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	17 (5.2)
Guns, surface	4—4.7 in (120 mm) twin turrets
Guns, AA	6—40 mm
A/S	2 four-barrelled depth charge mortars
Boilers	4 Controlled Superheat
Main engines	2 Werkspoor geared turbine, 60 000 shp; 2 shafts
Speed, knots	36
Complement	284

These ships have some side armour as well as deck protection, like light cruisers. They have "Limbo" type anti-submarine rocket throwers. Twin rudders. Propellers 370 rpm. Named after provinces of the Netherlands, and the two principal cities.

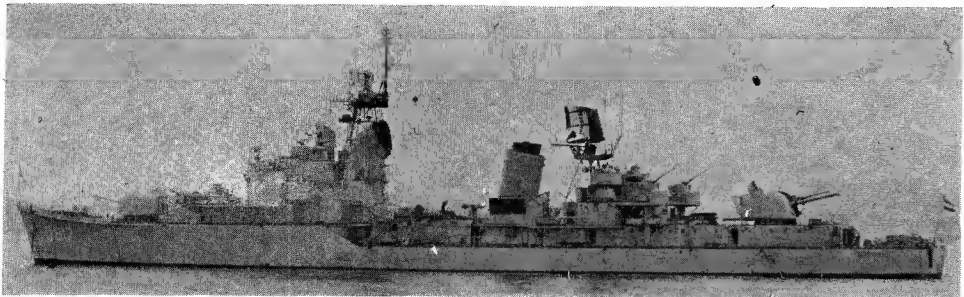
GUNNERY. The 4.7 inch guns are fully automatic with a rate of fire of 50 rounds per minute. All guns are radar controlled.

Name	No.	Builders
HOLLAND	D 808	Rotterdamse Droogdok Mij, Rotterdam
ZEELAND	D 809	Koninklijke Maatschappij De Schelde, Flushing
NOORD BRABANT	D 810	Koninklijke Maatschappij De Schelde, Flushing
GELDERLAND	D 811	Dok-en-Werfmaatschappij Wilton-Fijenoord

4 "Holland" Class

Displacement, tons	2 215 standard; 2 765 full load
Length, feet (metres)	360.5 (109.9) pp; 371 (113.1) oa
Beam, feet (metres)	37.5 (11.4)
Draught, feet (metres)	16.8 (5.1)
Guns, surface	4—4.7 in (120 mm) twin turrets
Guns, AA	1—40 mm
A/S	2 four-barrelled depth charge mortars
Boilers	4 Yarrow
Main engines	Werkspoor Parsons geared turbine, 4 500 shp; 2 shafts
Complement	247

Equipped with the turbines originally built before the Second World War for the destroyers of the "Gerard Callenburgh" class then under construction. In May 1940 these turbines fell into German hands, but in 1945 they were recovered, as the destroyers which the

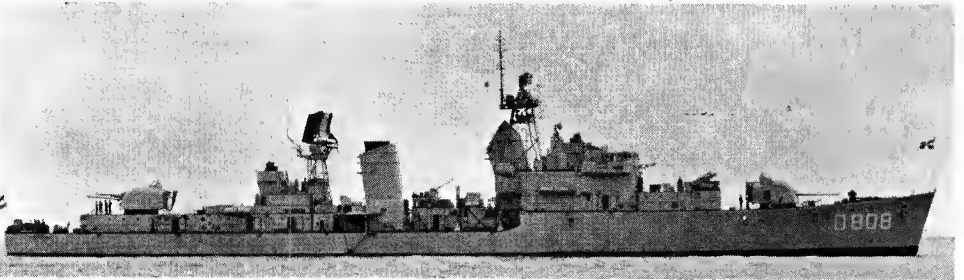


UTRECHT

1967, courtesy Godfrey H. Walker, Esq

TORPEDO TUBES. Utrecht was equipped with eight 21 inch anti-submarine torpedo tubes (single mounts, four on each side) in 1960 and Overijssel in 1961, and the others were to have been similarly armed, but owing to further developments in anti-submarine warfare the project was dropped and torpedo tubes already fitted were removed.

PHOTOGRAPHS. Of Friesland appear in the 1956-57 to 1958-59 editions, of Overijssel in the 1958-59 to 1963-64 editions, of Rotterdam in the 1964-65 to 1966-67 editions.



HOLLAND

1966, courtesy Godfrey H. Walker, Esq

Germans ordered to be built by Netherlands shipbuilding yards and fitted with these turbines were never built.

TUBES. Unlike most orthodox destroyers these never had tubes.

GUNNERY. The 4.7 inch guns are fully automatic and radar controlled. PHOTOGRAPHS of Noord Brabant appear in the 1957-58 edition, of Zeeland in the 1958-59 to 1960-61 editions, and of Gelderland in the 1961-62 to 1965-66 editions.

FRIGATES (Fregatten)

Name	No.	Builders	Laid down	Launched	Completed
TJERK HIDDES	F 804	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	1 June 1964	17 Dec 1965	
VAN GALEN	F 803	Koninklijke Maatschappij De Schelde, Flushing	25 July 1963	19 June 1965	1 Mar 1967
VAN NES	F 805	Koninklijke Maatschappij De Schelde, Flushing	25 July 1963	26 Mar 1966	
VAN SPEIJK	F 802	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	1 Oct 1963	5 Mar 1965	14 Feb 1967
EVERTSEN	F 815	Koninklijke Maatschappij De Schelde, Flushing	5 May 1965	18 June 1966	
ISAAC SWEERS	F 814	Nederlandse Dok en Scheepsbouw Mij, Amsterdam	5 May 1965	10 Mar 1967	

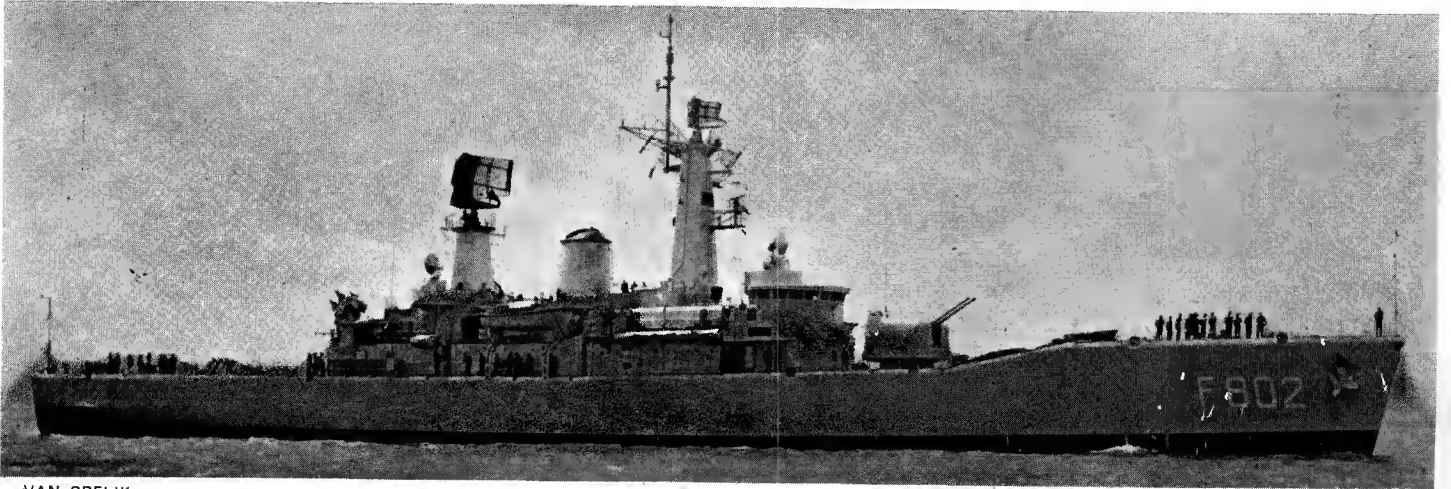
6 "Van Speijk" Class

Displacement, tons	2 200 standard; 2 850 full load
Dimensions, feet	360 wl, 372 oa x 41 x 18
Guns	2—4.5 in (twin turret)
Guided weapons	2 quadruple launchers for "Seacat"
A/S	1 three-barrelled depth charge mortar
Aircraft	1 lightweight helicopter armed with homing torpedoes

Boilers	2 Babcock & Wilcox
Main engines	2 double reduction geared turbines; 2 shafts; 30 000 shp = 28.5 knots
Complement	254

Built as replacements for the six frigates of the "Van Amstel" class which will be returned to the US successively. Basically similar to the British "Leander" class. To avoid delay these ships were fitted with equipment

available at short notice and instead of that still in the development stage. As far as possible equipment of Netherlands manufacture was installed, and this resulted in a number of changes in the ships' superstructure. Four ships were ordered in Oct 1962. Two later. Although in general they are based on the design of the British Improved Type 12, they have small modifications in accordance with the requirements of the Royal Netherlands Navy.



VAN SPEIJK

Frigates—continued

Name	No.	Builders	Launched	Completed	Transferred
DE BITTER (ex-USS <i>Rinehart</i> , DE 196)	F 807	Federal S8 & DD Co, Port Newark	24 Oct 1943	19 Dec 1943	1 June 1950
DE ZEEUW (ex-USS <i>Eisner</i> , DE 192)	F 810	Federal S8 & DD Co, Port Newark	12 Dec 1943	1 Jan 1944	3 May 1951
DUBOIS (ex-USS <i>O'Neill</i> , DE 188)	F 809	Federal S8 & DD Co, Port Newark	14 Nov 1943	6 Dec 1943	23 Oct 1950
VAN AMSTEL (ex-USS <i>Burrows</i> , DE 195)	F 806	Dravo Corporation, Wilmington, Del	8 Jan 1944	12 Feb 1944	1 June 1950
VAN EWIJCK (ex-USS <i>Gustafson</i> , DE 182)	F 808	Federal S8 & DD Co, Port Newark	3 Oct 1943	1 Nov 1943	23 Oct 1950
VAN ZIJLL (ex-USS <i>Stern</i> , DE 187)	F 811	Federal S8 & DD Co, Port Newark	31 Oct 1943	1 Dec 1943	3 May 1951

6 "Van Amstel" Class

Displacement, tons	1 300 standard; 1 900 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	36 (11.0)
Draught, feet (metres)	14 (4.3) max
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	6—40 mm
A/S	1 Hedgehog; 4 DCT; 2 DC racks
Main engines	6 000 hp GM diesels, electric drive
Speed, knots	19
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	170 to 210

Former US destroyer escorts of the "Bostwick" class acquired under MDAP.

TORPEDO TUBES. The original three 21 inch torpedo tubes in a triple mounting were removed.

PHOTOGRAPHS. A photograph of *De Bitter* appears in the 1964-65 to 1966-67 editions.

DISPOSALS OF FRIGATES

Johan Maurits van Nassau was scrapped in 1960; *Van Speijk* was stricken from the active list in 1960; *Batjan*, *Boeroe* and *Ceram* in 1958; *Jan van Brakel* in Aug 1957; *Soemba* in Jan 1956; *Van Kinsbergen* on 1 Dec 1955; *Flores* on 1 May 1955. (*Flores* was renamed *Van Speijk* after the former *Van Speijk* was stricken from the active list but renamed *Flores* again after the launch of the new frigate *Van Speijk* on 5 Mar 1965).

DISPOSAL OF FRIGATE (ex-Destroyer)

Marnix (ex-HMS *Garland*), former British destroyer of the "G" flotilla, purchased by the Netherlands in 1947 and subsequently refitted as an anti-submarine vessel and engineering training ship, and reclassified as a frigate, was sold for scrap on 10 Apr 1964 to J. de Smedt at Antwerp.

DISPOSAL OF DESTROYERS

The destroyers *Banckert* (ex-HMS *Quilliam*) and *Van Galen* (ex-HMS *Noble*) were sold for scrap on 8 Feb 1957, *Banckert* to J. de Smedt at Antwerp and *Van Galen* to Frank Rijdsdijk's Industriële Handelssondernemingen at Hendrik-Ido-Ambacht.

Name	No.	Builders	Laid down	Launched	Completed
FRET (ex-PCE 1604)	F 818	General Shipbuilding and Engineering Works, Boston	18 Dec 1952	30 July 1953	4 May 1954
HERMELIJN (ex-PCE 1605)	F 819	General Shipbuilding and Engineering Works, Boston	2 Mar 1953	6 Mar 1954	5 Aug 1954
JAGUAR (ex-PCE 1609)	F 822	Avondale Marine Ways, Inc, New Orleans, Louisiana	10 Dec 1952	20 Mar 1954	11 June 1954
PANTER (ex-PCE 1608)	F 821	Avondale Marine Ways, Inc, New Orleans, Louisiana	1 Dec 1952	30 Jan 1954	11 June 1954
VOS (ex-PCE 1606)	F 820	General Shipbuilding and Engineering Works, Boston	3 Aug 1952	1 May 1954	2 Dec 1954
WOLF (ex-PCE 1607)	F 817	Avondale Marine Ways, Inc, New Orleans, Louisiana	15 Nov 1952	2 Jan 1954	26 Mar 1954

6 "Wolf" Class

Displacement, tons	808 standard; 975 full load
Length, feet (metres)	180 (54.9) pp; 184.5 (56.2) oa
Beam, feet (metres)	33 (10.0)
Draught, feet (metres)	9.5 (2.9) mean; 14.5 (4.4) max
Guns, dual purpose	1—3 in (76 mm)
Guns, AA	6—40 mm (<i>Jaguar</i> , <i>Panter</i> : 4—40 mm); 8—20 mm
A/S	1 Hedgehog; 2 DCT (<i>Jaguar</i> , <i>Panter</i> : 4); 2 DC racks
Main engines	2 GM diesels; 1 600 bhp; 2 shafts
Speed, knots	15
Complement	96

PCE type escorts built in the United States under the Mutual Defence Assistance Programme.

PHOTOGRAPHS. A photograph of *Fret* appears in the 1957-58 to 1960-61 editions.

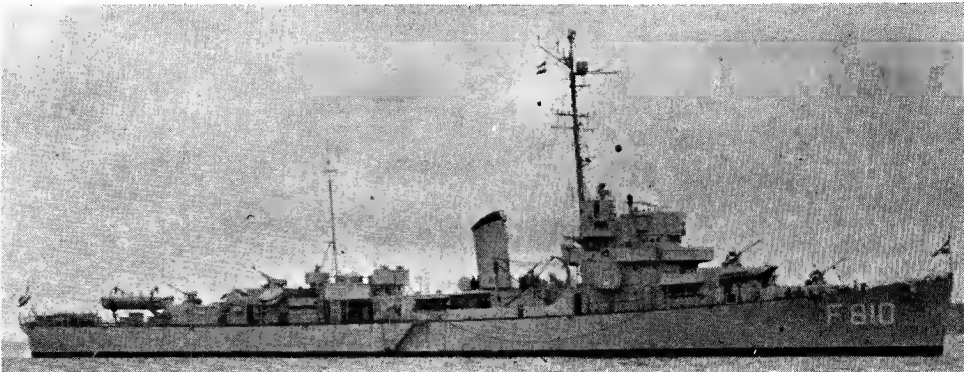
DISPOSALS

The corvette *Lynx* (ex-PCE 1626) was handed over to the Italian Navy on 18 Oct 1961 at Den Helder as part of the United States Mutual Defence Assistance Program and renamed *Aquila* (see Italian section).

DISPOSALS OF "PIET HEIN" CLASS. Of the three fast frigates of the "Piet Hein" class, converted from destroyers (originally "S" class purchased from Great Britain in 1945-46 and reconstructed with helicopter platform at Rijkswerf Willemsoord in 1957-58), *Piet Hein* (ex-HMS *Serapis*) was scrapped on 16 Oct 1961, and *Evertsen* (ex-HMS *Scourge*) and *Kortenaar* (ex-HMS *Scorpion*, ex-*Sentinel*) were withdrawn from service in Dec 1962 and scrapped.

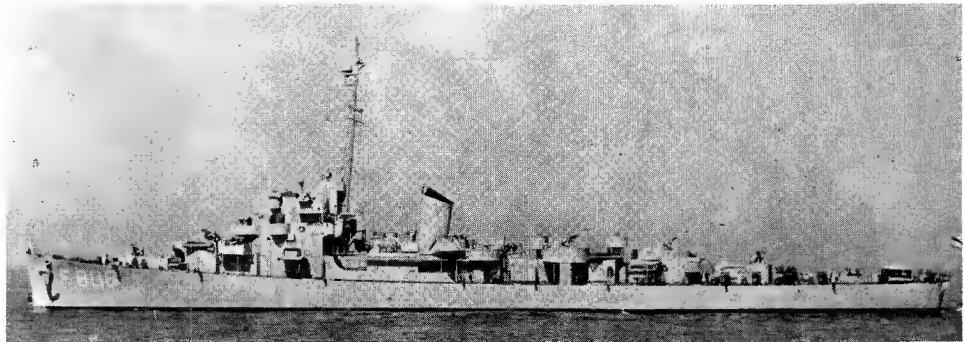
DISPOSAL OF MINESWEEPER SUPPORT SHIP

The minesweeper support ship *Willem van der Zaan*, former frigate, former minelayer, was removed from the active list on 1 Oct 1963 and is being used as an accommodation ship at Flushing, pennant number A 880 (instead of F 824).



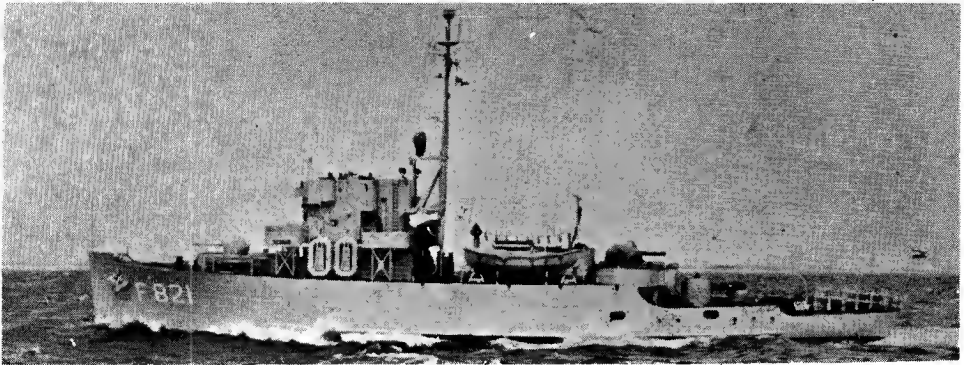
DE ZEEUW

1966, courtesy Godfrey H. Walker Esq



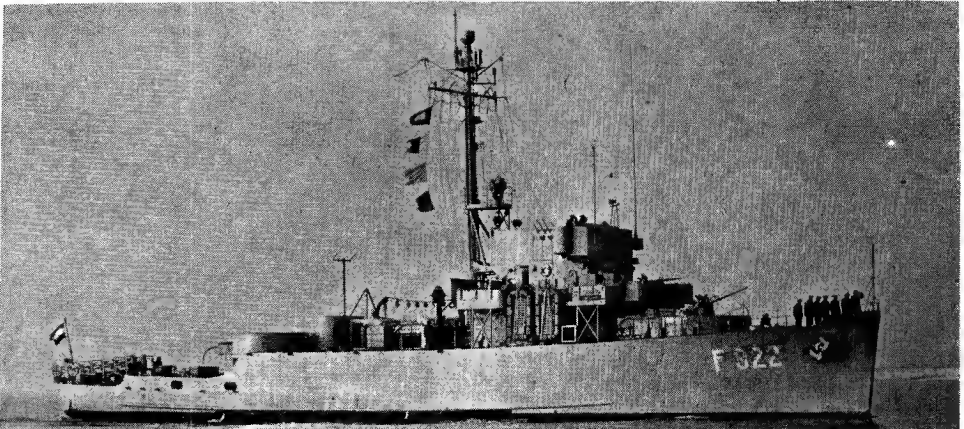
VAN AMSTEL

1967, Royal Netherlands Navy, Official



PANTER

Royal Netherlands Navy, Official



JAGUAR

Wright & Logan

ESCORTS (Escortevaartuigen)

6 U.S. AM Wooden Type

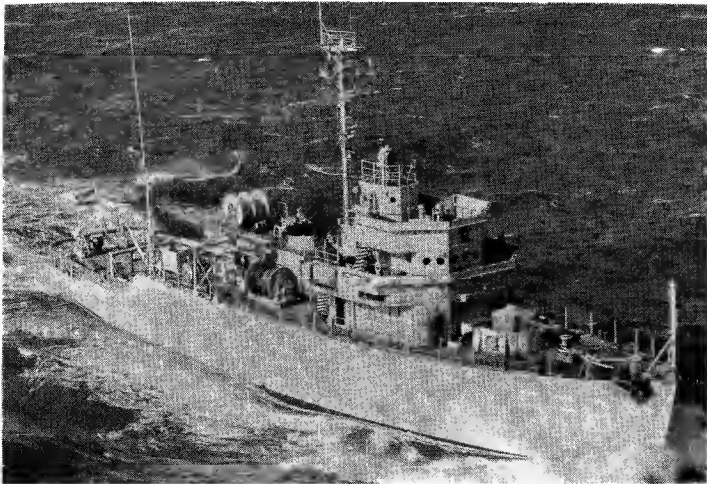
Name	No.	Laid down	Completed
ONVERSAAGD	(ex-AM 480) A 854 (ex-M 884)	1952 27 May 1954	
ONBEVREESD	(ex-AM 481) A 855 (ex-M 885)	1952 21 Sep 1954	
ONVERSCHROKKEN	(ex-AM 483) A 856 (ex-M 886)	1952 22 July 1954	
ONVERMOEID	(ex-AM 484) A 857 (ex-M 887)	1952 23 Sep 1954	
ONVERVAARD	(ex-AM 482) A 858 (ex-M 888)	1952 31 Mar 1955	
ONVERDROTEN	(ex-AM 485) A 859 (ex-M 889)	1952 22 Nov 1954	

Displacement, tons	735 standard; 790 full load
Dimensions, feet	165 pp; 172 oa x 36 x 10 max
Guns	1—40 mm AA
A/S	2 DC
Main engines	Diesel; 1 600 bhp = 15.5 knots
Oil fuel, tons	46
Radius, miles	2 400 at 12 knots
Complement	67

Built in USA for the Netherlands under MDAP. *Onversaagd*, *Onbevreesd* and *Onvervaard* were built by Astoria Marine Construction Co and the remaining three by Peterson,

Builders, Wisconsin. RECLASSIFICATION. Originally designed as Ocean Minesweepers (*Oceanmijnvegers*) but used as Escorts and re-numbered with "A" pennants since 1966.

PHOTOGRAPHS. Photographs of *Onverdroten* appear in the 1957-58 to 1965-66 editions.



ONVERVAARD 1966, Skyfotos

PATROL VESSELS (Patrouillevaartuigen)

5 U.S. SC Type Submarine Chasers

Name	No.	Laid down	Launched	Completed
BALDER	P 802	12 Sep 1953	24 Feb 1954	6 Aug 1954
BULGIA	P 803	10 Oct 1953	24 Apr 1954	9 Aug 1954
FREYR	P 804	24 Feb 1954	21 July 1954	1 Dec 1954
HADDA	P 805	24 Apr 1954	2 Oct 1954	3 Feb 1955
HEFRING	P 806	21 July 1954	1 Dec 1954	23 Mar 1955

Displacement, tons	149 standard; 225 full load
Dimensions, feet	114.9 pp; 119.1 oa x 20.2 x 5.9
Guns	1—40 mm; 3—20 mm
A/S	2 DCT, Mousetrap
Main engines	Diesels; 2 shafts; 1 050 shp = 15.5 knots
Radius, miles	1 000
Complement	27

* Built in the Netherlands by Rijkswerf Willemsoord with USA funds under MDAP as an off-shore procurement. US SC Nos 1627-1631.

PHOTOGRAPHS. A photograph of *Hadda* appears in the 1960-61 edition, and of *Balder* in the 1955-56 to 1959-60 and 1961-62 to 1965-66 editions.



FREYR 1966, Royal Netherlands Navy, Official

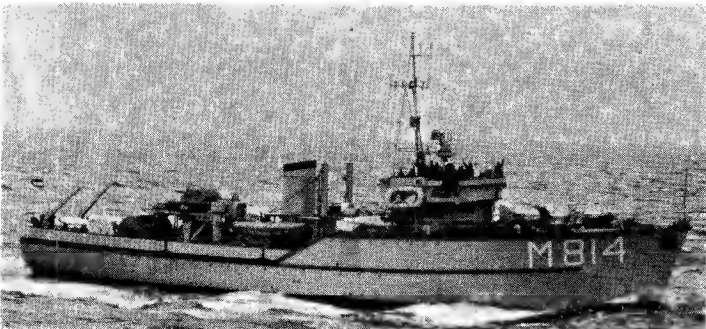
COASTAL MINESWEEPERS (Kustmijnvegers)

32 "Dokkum" Class. Netherlands Wooden Type

AALSMEER	M 811	GRIJPSKERK	M 826	RHENEN*	M 844
ABCOUDE	M 810	HOOGZAND	M 802	ROERMOND	M 806
AXEL	M 808	HOOGVEEN	M 827	SITTARD	M 830
DOKKUM	M 801	LEERSUM*	M 822	STAPHORST	M 828
DRACHTEN	M 812	LISSE*	M 843	SNEEK	M 824
DRUNEN	M 818	LOCHEM	M 816	STEENWIJK	M 804
ELST	M 829	MEPPEL	M 814	VEERE	M 842
GEMERT	M 841	NAALDWIJK	M 809	VENLO	M 817
GIETEN	M 805	NAARDEN	M 823	WAALWIJK*	M 807
GIETHOORN	M 815	OMMEN	M 813	WILDERVANK	M 803
GOES	M 819			WOERDEN*	M 820

Displacement, tons	373 standard; 417 full load
Dimensions, feet	149.8 oa x 28 x 6.5
Guns	2—40 mm
Main engines	2 diesels; Fyenoord MAN or Werkspoor; 2 500 bhp = 16 knots
Complement	38

Of 32 coastal minesweepers built in the Netherlands, 18 were offshore procurement (on US account under MDAP) but conform to the British design of coastal minesweepers. The Netherlands built the remaining 14 Minesweepers on her own account. All launched in 1954-56 and completed in 1955-57. Named after small towns in the Netherlands. **Leersum*, *Lisse*, *Rhenen*, *Waalwijk* and *Woerden* were re-rated as diving vessels in 1962-65. A photograph of *Dokkum* appears in the 1956-57 to 1961-62 editions, of *Venlo* in the 1961-62 to 1965-66 editions, of *Aalsmeer* in the 1962-63 to 1966-67 editions.



MEPEL 1966, courtesy Dr Ian S. Pearsall



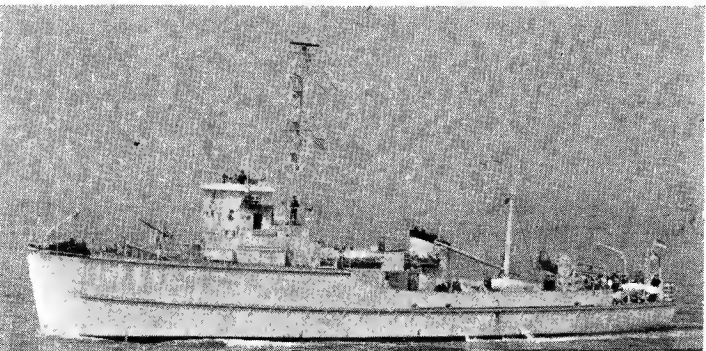
NAALDWIJK 1967, courtesy, Dr Giorgio Arra

14 "Beemster" Class. U.S. AMS Wooden Type

BEEMSTER	(ex-AMS 105) M 845	BREUKELN	(ex-AMS 100) M 852
BOLSWARD	(ex-AMS 109) M 846	BLARICUM	(ex-AMS 112) M 853
BEDUM	(ex-Beerta, ex-AMS 106) M 847	BRIELLE	(ex-AMS 167) M 854
BEILEN	(ex-AMS 110) M 848	BRESKENS	(ex-AMS 148) M 855
BORCULO	(ex-AMS 107) M 849	BRUINISSE	(ex-AMS 168) M 856
BORNE	(ex-AMS 108) M 850	BOXTEL	(ex-AMS 149) M 857
BRUMMEN	(ex-AMS 111) M 851	BROUWERSHAVEN	(ex-AMS 150) M 858

Displacement, tons	330 standard; 384 full load
Dimensions, feet	138 pp; 144.7 oa x 27.9 x 7.5
Guns	2—20 mm AA
Main engines	2 diesels; 880 bhp = 13.6 knots
Complement	37

Non-magnetic MSC (ex-AMS) type. All completed in and transferred from USA in 1953-54. Named after small towns in the Netherlands. A photograph of *Beemster* appears in the 1955-56 to 1960-61 editions, and of *Brouwershaven* in the 1961-62 to 1965-66 editions.



BRUMMEN 1966, Royal Netherlands Navy, Official

INSHORE MINESWEEPERS

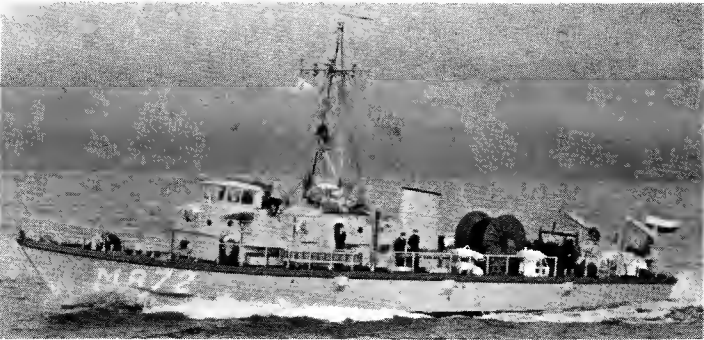
(Ondiepwater mijnenvegers)

16 "Van Straelen" Class

ALBLAS	M 868	MAHU	M 880	VAN MOPPES	M 873
BUSSEMAKER	M 869	SCHUILING	M 876	VAN STRAELEN	M 872
CHÖMPFF	M 874	STAVERMAN	M 881	VAN VERSEDAAL	M 877
HOUTEPEN	M 882	VAN DER WEL	M 878	VAN WELL GROENEVALD	
LACOMBLE	M 870	VAN HAMEL	M 871		M 875
		VAN 'T HOFF	M 879	ZOMER	M 883

Displacement, tons	151 light; 169 full load
Dimensions, feet	90 pp; 99.3 oa × 18.2 × 5.2
Guns	1—20 mm AA
Main engines	Werkspoor diesels; 2 shafts; 1 100 bhp = 13 knots
Complement	12

USA and Netherlands signed an agreement for the construction of 16 inshore minesweepers for the Royal Netherlands Navy at a cost of \$16 900 000, 6 by Werf de Noord at Albasserdam; 5 by N.V. de Arnhemse Scheepsbouw Maatschappij at Arnhem; and 5 by Amsterdamsche Scheepswerf G. de Vries Lentsch Jr at Amsterdam. Eight were built under the offshore procurement programme, with MDAP funds, and the remaining eight were paid for by the Royal Netherlands Navy. All ordered in mid-1957. Built of wood and non-magnetic materials. The keel for *Alblas*, the first, was laid at the yard of Werf de Noord N.V. at Albasserdam on 26 Feb 1958, she was launched on 29 June 1959, started trials on 15 Jan 1960 and was completed on 12 Mar 1960. All the others were laid down in 1958-61, launched in 1958-61 and commissioned in 1960-62. The first nine ships built are named after naval and marine officers who distinguished themselves during the Second World War. The remaining seven are named after naval ratings who were also decorated posthumously. A photograph of *Alblas* appears in the 1960-61 edition, and of *Bussemaker* in the 1961-62 to 1965-66 editions.



VAN STRAELEN 1966, Royal Netherlands Navy, Official

ACCOMMODATION SHIPS (Logementschepen)

A 880 *William von der Zaan*, former minesweeper support ship, former frigate, former minelayer, A 877 (ex-*Flores*), former gunboat, A 878, *Tromp*, A 879 *Jacob van Heemskerck*, former light cruisers, A 891 *Soemba*, former radar training ship, A 881 *Neptunus*, A 882 *Schorpioen*, A 884 *Buffel*, A 886 *Cornelis Drebbel*, A 887 *Haarlemmermeer* and A 888 *Hertog Hendrik* (old ships).

SUPPLY SHIPS (Voorraadschepen)

ZUIDERKRUIS (ex-Cranston Victory) A 853

Displacement, tons	7 190 light; 11,688 full load
Measurement, tons	9,376 gross
Dimensions, feet	455.2 oa × 62 × 20.5
Main engines	Westinghouse steam turbines; 8,500 shp = 17 knots
Oil fuel, tons	1,560

Victory ship. Former merchant liner (emigrant carrier). Built in 1944 by Oregon Shipbuilding Corp. Purchased by the Royal Netherlands Navy in Jan 1963 and converted into store and accommodation ship for base staff at Den Helder.

1 Ex-U.S. LST Type

WOENDI (ex-*Steven van der Hagen*, ex-LST V, ex-LST 1034) A 832

Displacement, tons	1,625 light; 3,770 standard; 4 145 full load
Dimensions, feet	316 wl; 328 oa × 50 × 14 max
Guns	4—40 mm AA; 6—20 mm AA
Main engines	Diesel; 2 shafts; 1 800 bhp = 11 knots
Complement	105

Built at Boston, Mass, in 1944. Seagoing store ship at Den Helder.

1 Ex-British LST Type

PELIKAAN (ex-HMS *Thruster*, ex-LST) A 830

Displacement, tons	2 840 light; 4 250 standard; 6 538 full load
Dimensions, feet	390 × 49 × 13
Guns	2—40 mm AA; 10—20 mm AA
Main engines	Turbine; 7 000 shp = 17 knots
Oil fuel, tons	2 100 max
Complement	127

Built by Harland & Wolff Ltd, Belfast. Laid down on 31 July 1941. Launched on 24 Sep 1942. Completed on 14 Mar 1943. Purchased and taken over from Great Britain in 1947. Commissioned in the Royal Netherlands Navy in July 1948. Used as a store and accommodation ship at Den Helder. Photograph in the 1957-58 edition.

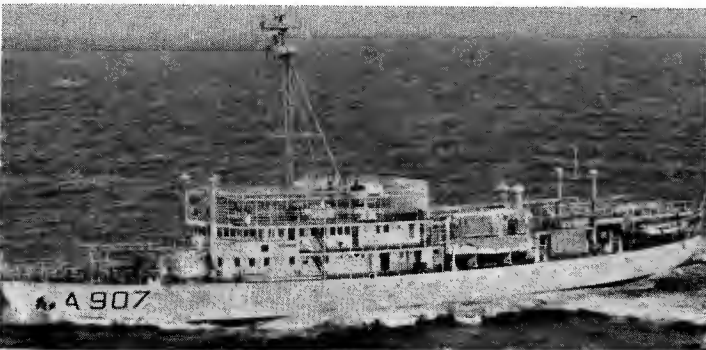
SURVEY SHIPS (Ophemingsvaartuigen)

2 Sloop Type

Name	No.	Builders	Laid down	Launched	Completed
LUYMES	A 902	Gusto, Schiedam	4 Apr 1949	21 Apr 1951	4 May 1952
SNELLIUS	A 907	P. Smit, Jr, Rotterdam	3 Jan 1949	14 Apr 1951	4 Feb 1952

Displacement, tons	1 100 standard; 1 538 full load
Dimensions, feet	234.2 × 35.5 × 7 max
Guns	1—40 mm AA; 2—20 mm AA
A/S	2 DCT; 1 Mousetrap
Main engines	Two 6-cycle, 4 stroke Stork diesels; 2 shafts; 2 000 bhp = 15 knots
Complement	108

Fitted for service in the tropics. A photograph of *Luymes* appears in the 1960-61 to 1965-66 editions.



SNELLIUS 1966, Skyfotos

1 Patrol Type

ZEEFAKKEL A 903

Displacement, tons	355 standard; 384 full load
Dimensions, feet	149 oa; 24.7 × 7 max
Guns	1—3 in AA; 1—40 mm AA
Main engines	Two 8-cycle 4-stroke Smit MAN diesels; 2 shafts; 640 bhp = 12 knots
Complement	29

Originally ordered from Vuyk but her construction was transferred later to J. & K Smit Kinderdijk where she was laid down in Sep 1949, launched on 21 July 1950 and completed on 22 Mar 1951. Commissioned on 23 Mar 1951, for local service.



ZEEFAKKEL Added 1966, courtesy Lieut L. L. von Munching

4 Inshore Type

DREG I A 909 DREG II A 910 DREG III A 919 DREG IV A 920

Displacement, tons	46 standard; 48 full load
Dimensions, feet	65.7 × 15 × 5
Main engines	120 hp × 9.5 knots
Complement	10

Dreg I and *Dreg II* were launched on 15 May 1950 and completed in July 1950.

DIVING VESSELS (Duikvaartuigen)

The five diving vessels (ex-coastal minesweepers) of the US 8YMS type, were sold in 1962 and replaced by five coastal minesweepers of the "Dokkum" class, LEERSUM, LISSE, RHENEN, WAALWIJK and WOERDEN acting as diving vessels. The four small diving vessels, *Keeten*, *Jakhals*, *Mastgat* and *Zijpe* scrapped in 1962 were replaced by *Argus*, A 843, *Hydra*, A 850, *Nautilus*, A 849 and *Triton*, A 848.

WEATHER SHIPS. The weather observation ships *Cirrus* (ex-USS *Abilene*, PF 58) and *Cumulus* (ex-USS *Forsyth*, PF 102), former patrol frigates, were replaced by a new weather observation ship, *Cumulus*, specially built for this work. In May 1962 her keel was laid at the yard of the NV Gebr van der Werf at Deest (near Nijmegen). Launched on 22 Dec 1962. Taken over on 18 Apr 1963. Measurement: 1 974 tons gross. Dimensions: Length 233.7 oa; 203.5 pp. Beam 41 feet. Draught 15 feet. Main engines: 6-cyl Werkspoor diesel; 1 400 bhp = 12 knots. Crew 62. She is operated by the Ministry of Transport and manned by mercantile personnel.

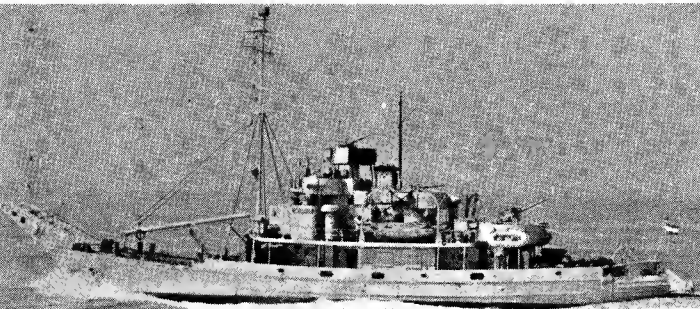
200 NETHERLANDS

DIVING TENDER (Duikwerkschip)

CERBERUS A 895

Displacement, tons	780 standard; 902 full load
Dimensions, feet	165 × 33 × 10
Guns	1—3 in; 4—20 mm AA
Main engines	Diesel electric; 1 shaft; 1 500 bhp = 12.8 knots
Complement	51

Former netlayer and boom defence vessel. Built by Bethlehem Steel Company, Staten Island. Launched in May 1952. Completed on 10 Nov 1952. Transferred from the US in Dec 1952. Equipped as salvage vessel and diving tender in 1961 to replace *Hercules*, but she retains her netlaying capability.



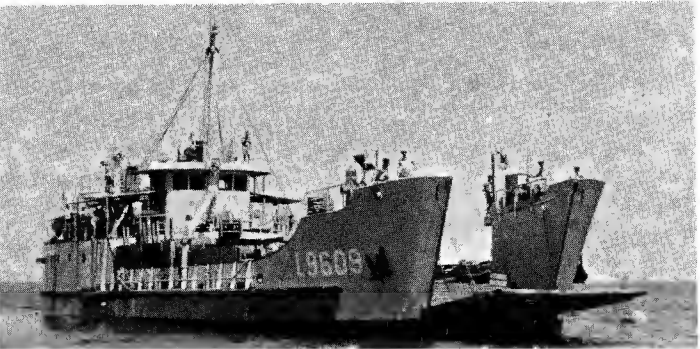
CERBERUS 1965, Royal Netherlands Navy, Official

LANDING CRAFT (Landingsvaartuigen)

L 9609 (ex-Kais)

*Measurement, tons	468 gross
Dimensions, feet	137 × 36.2 × 4.5
Guns	4—20 mm AA
Main engines	2 Kromhout diesel engines; 540 bhp = 8.5 knots
Complement	22

Built in 1954 by Arnhemsche Scheepsbouw Mij, Arnhem. Taken over from Nederl, Nieuw Guinea Petroleum Mij on 4 June 1960. Stationed in the Netherlands Antilles.



L 9609 1965, Royal Netherlands Navy, Official

L 9521

L 9526

Now officially rated as LCA Type. There are also ten new landing craft made of plastic (polyester) L 9510-9515, 9517, 9518, 9520 and 9522, 13.6 tons, 46.2 × 11.5 × 6 feet. Rolls Royce diesel. 200 bhp = 12 knots, all commissioned in 1962-63, except L 9520 in 1964.

DISPOSALS

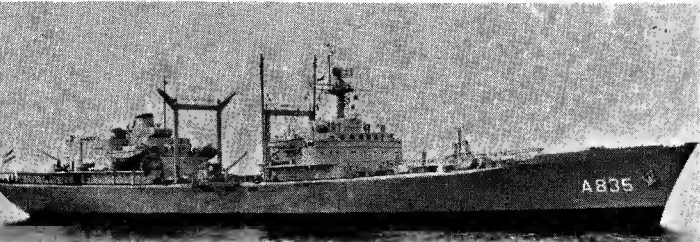
The two landing craft of the former British LCT (7) type, L 9601 (ex-LT 5, ex-LCT 7031) and L 9606 (ex-LT 10, ex-LCT 7125), were officially deleted from the list in 1966, as were the two of the former LCM type, L 9661 (ex-LU 1, ex-LCM 408) and L 9662 (ex-LU 2, ex-LCM 451).

FAST COMBAT SUPPORT SHIP

POOLSTER A 835

Displacement, tons	16 800 full load
Measurement, tons	10 000 deadweight
Dimensions, feet	515 pp; 552.2 oa × 66.7 × 27
Guns	2—40 mm AA
Aircraft	Capacity: 5 helicopters (official complement 3 SH-34 J)
Main engines	22 500 shp turbines = 21 knots (18 service).

Fast fleet replenishment tanker and supply ship (*Bevoortradingschip*). Built by Rotterdam Dry Dock Co. Laid down on 18 Sep 1962. Launched on 16 Oct 1963. Trials mid-1964. Commissioned on 10 Sep 1964. Helicopter deck aft. Funnel heightened by 4.5 m. There is the immobile tanker A 876 (ex-*Ena*) at Den Helder.



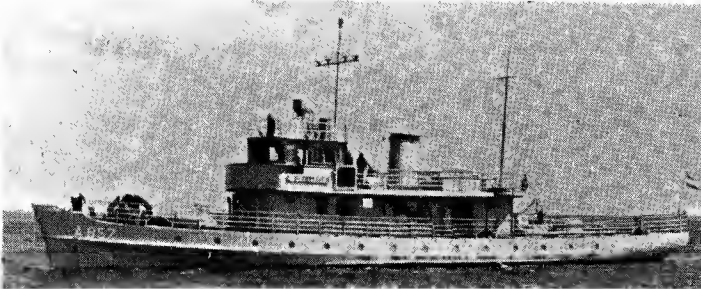
POOLSTER 1966, Wright & Logan

TRAINING SHIPS Opleidingsvaartuigen)

HENDRIK KARSEN (ex-Y 807, ex-RC 11, ex-De Mok 1) Y 8102

Displacement, tons	172 standard; 185 full load
Dimensions, feet	137.8 oa; 114 pp × 20.7 × 5.5
Guns	2—20 mm AA
Main engines	2 Kromhout diesels; 180 bhp = 11 knots
Complement	18

Built by Rijkswerf Willemsoord. Launched in 1939. Equipped with water monitors for fire fighting. Renamed *Hendrik Karsen* in 1954. Former midshipmen tender.



HENDRIK KARSEN 1966, Royal Netherlands Navy, Official

HOBEIN (ex-Doornbos, ex-German Dornbusch) Y 8101

Displacement, tons	132
Dimensions, feet	92 oa; 83.3 pp × 19.7 × 5.5
Guns	1—40 mm AA; 1—20 mm AA
Main engines	Diesel; 250 bhp = 8.5 knots
Complement	10

Navigational training ship for midshipmen. Renamed *Hobein* in July 1952.

URANIA (ex-Tromp) Y 8050

Displacement, tons	38
Dimensions, feet	72 × 16.3 × 10
Main engines	Diesel; 65 hp
Complement	15

Schooner used for training in seamanship. Commissioned on 23 Apr 1938. (*van Kinsbergen*, former frigate, ex-gunboat, is instruction ship at the Technical Training Centre in Amsterdam).

TENDER (Hulpschip)

MERCUUR A 829

Displacement, tons	274 standard; 290 full load
Dimensions, feet	137.5 pp; 140 oa × 23 × 9
Main engines	Diesels engine; 375 bhp = 12 knots (see <i>Notes</i>)
Complement	35

Built by Rijkswerf Willemsoord. Launched on 26 Feb 1936. Torpedo School. Rebuilt in 1960, triple expansion replaced by diesel, and guns removed. A torpedo recovery vessel VAN BOCHOVE, was built under the 1961 Navy Estimates by Zaanlandsche Scheepsbouw Mij at Zaandam, ordered Oct 1961, launched on 20 July 1962 and commissioned in Aug 1962; steel vessel with Schottelroepropeller, diesels 140 bhp = 8 knots; 97.2 × 18.2 × 6 feet. 150 tons. Pennant No. A 923.

TUGS (Sleepboten)

WAMANDAI A 870 (ex-Y 8035)

Displacement, tons	159 standard; 185 full load
Dimensions, feet	89.2 × 21.3 × 7.5
Guns	2—20 mm AA
Main engines	Diesel; 500 bhp = 11 knots

Built by Rijkswerf, Willemsoord, Den Helder. Launched on 28 May 1960. Equipped with salvage pumps and fire fighting equipment. In the Netherlands Antilles since 1964.

WAMBRAU A 871

Displacement, tons	154 standard; 184 full load
Dimensions, feet	86.5 oa × 20.7 × 7.5
Guns	2—20 mm AA
Main engines	Werkspoor diesel and Kort nozzle; 500 bhp = 10.8 knots

Built by Rijkswerf Willemsoord. Launched on 27 Aug 1956. Completed on 8 Jan 1957. Equipped with salvage pumps and fire fighting equipment. Stationed at Den Helder.

HERCULES (ex-Walcheren XII, ex-Atlas) A 828

Displacement, tons	400 standard; 440 full load
Dimensions, feet	142 × 29 × 15
Guns	2—20 mm AA
Main engines	MWM diesel; 840 bhp = 12 knots
Complement	20

Built as a tug for the German Air Force Flotilla. Launched by Nobiskrug Dockyard, Rendsberg, in 1944. Completed in Amsterdam in 1950. Fitted with pumps and gear as salvage vessel and diving tender and commissioned on 18 Jan 1951, but after *Cerebus* was equipped for salvage used as a tug only. Photograph in the 1957-58 edition.

BERKEL Y 8037 DINTEL Y 8038 DOMMEL Y 8039 IJSSEL Y 8040

Displacement, tons	139 standard; 163 full load
Dimensions, feet	82 oa × 20.5 × 7.3
Main engines	Werkspoor diesel and Kort nozzle; 500 bhp

Harbour tugs built by H. H. Bodewes, Millingen. Specially designed for use at Den Helder. Completed in 1956-57.

ROYAL NEW ZEALAND NAVY

Naval Board

Chairman: (Minister of Defence)
The Hon Dean J. Eyre, MP

First Naval Member and Chief of Naval Staff:
Rear Admiral J. O'C. Ross, CBE

Second Naval Member (Personnel):
Commodore J. P. S. Vallant

Third Naval Member (Supply, Transport and Works):
Commodore L. B. Carey, MSc, AMIEE

Deputy Secretary of Defence (Navy):
Mr W. Hutchings

Diplomatic Representation

Head of New Zealand Defence Liaison Staff,
London:
Commodore J. F. McKenzie, OBE

Naval & Air Attaché in Washington:
Air Commodore Kenneth W. Trigrance,
OBE, DFC, QHADC

Strength of the Fleet

- 1 General Purpose Frigate
- 3 Anti-Submarine Frigates
- 1 Survey Ship (Former Frigate)
- 4 Escort Minesweepers (Ocean)
- 1 Patrol Vessel (Corvette Type)
- 12 Seaward Patrol Craft
- 1 Antarctic Support Ship
- 2 Tenders

Personnel

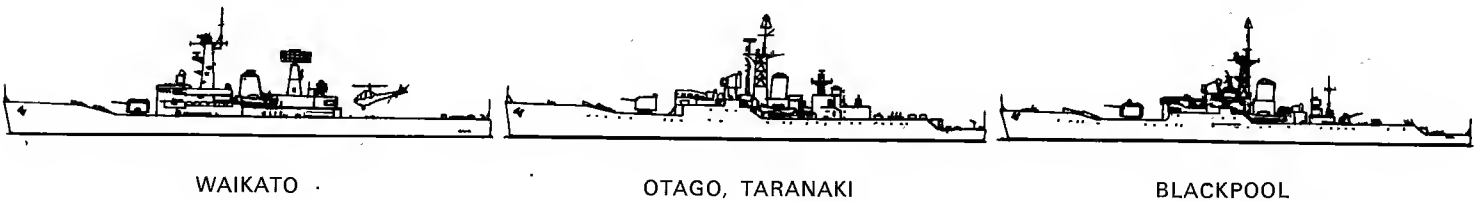
January 1964: 3,059 officers and ratings
January 1965: 2,818 officers and ratings
January 1966: 2,950 officers and ratings
January 1967: 2,920 officers and ratings

Mercantile Marine

Lloyd's Register of Shipping :
142 vessels of 244,354 tons gross

Silhouettes

Scale: 150 feet = 1 inch

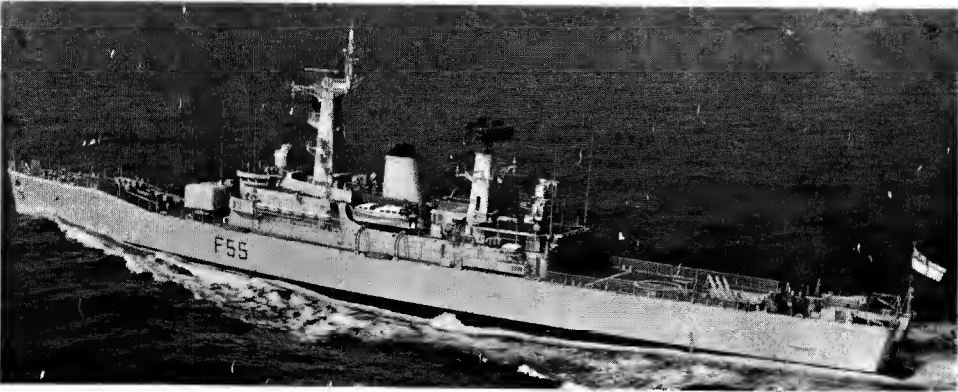


GENERAL PURPOSE FRIGATE (A/S)

1 "Leander" Class. Improved Type 12

Name	No.	Builders	Laid down	Launched	Completed
WAIKATO	F 55	Harland & Wolff Ltd, Belfast	10 Jan 1964	18 Feb 1965	19 Sep 1966

Displacement, tons 2 305 standard; 2 640 normal; 2 800 full load
Length, feet (metres) 360 (109.7) pp; 372 (113.4) oa
Beam, feet (metres) 41 (12.5)
Draught, feet (metres) 13.8 (4.2)
Aircraft 1 Wasp helicopter armed with homing torpedoes
Missiles, AA 1 "Seacat" quadruple launcher
Guns, surface 2—4.5 in (115 mm) in twin turret
A/S 1 Limbo 3-barrelled DC mortar
Boilers 2 Babcock & Wilcox
Main engines 2 sets d.r. geared turbines 30 000 shp; 2 shafts
Speed, knots 30
Complement 257 (17 officers, 240 ratings)



WAIKATO

1967, Royal New Zealand Navy, Official

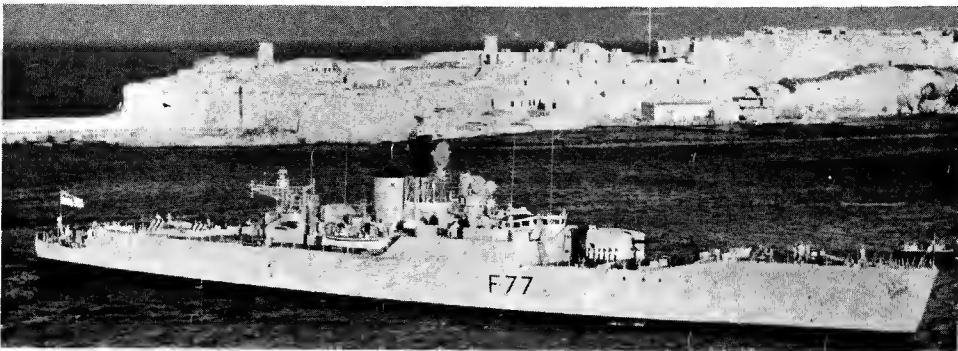
Ordered on 14 June 1963 (announced by the High Commission for New Zealand in London). Commissioned on 16 Sep 1966. Trials in the United Kingdom until spring 1967. Arrived in New Zealand waters in May 1967.

ANTI-SUBMARINE FRIGATE (R.N.)

1 "Whitby" Class. Type 12

Name	No.	Builders	Laid down	Launched	Completed
BLACKPOOL	F 77	Harland & Wolff Ltd, Belfast	20 Dec 1954	14 Feb 1957	13 Aug 1958

Displacement, tons 2 150 standard; 2 560 full load
Length, feet (metres) 360 (109.7) wl; 369.8 (112.7) oa
Beam, feet (metres) 41 (12.5)
Draught, feet (metres) 17.5 (5.3) max
Guns, surface 2—4.5 in (115 mm) in twin turret
Guns, AA 1—40 mm Bofors
A/S 2 Limbo 3-barrelled DC mortars
Boilers 2 Babcock & Wilcox
Main engines 2 sets d.r. geared turbines 30 430 shp; 2 shafts
Speed, knots 31 max
Oil fuel (tons) 370
Complement 221 (11 officers, 220 ratings)



BLACKPOOL

1967, A. & J. Pavia

It was announced on 30 Mar 1966 that the New Zealand Government would hire HMS Blackpool for four to five years until a new frigate for New Zealand was built. Blackpool was commissioned as a unit of the Royal New Zealand Navy on 16 June 1966.

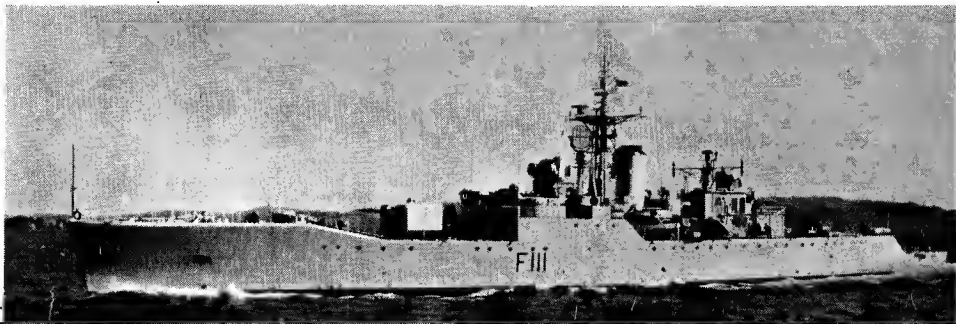
ANTI-SUBMARINE FRIGATES

Name	No.	Builders	Launched	Completed
OTAGO (ex-Hastings)	F 111	John I. Thornycroft & Co, Ltd Woolston, Southampton	11 Dec 1958	22 June 1960
TARANAKI	F 148	J. Samuel White & Co Ltd, Cowes, Isle of Wight	19 Aug 1959	28 Mar 1961

2 "Rothesay" Class. Type 12

Displacement, tons	2 144 standard; 2 557 full load
Length, feet (metres)	360 (109.7) pp; 370 (112.8) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	12 (3.7)
Missiles, AA	1 "Seacat" quadruple launcher
Guns, surface	2—4.5 in (115 mm) in twin turret
A/S	2 Limbo 3-barrelled DC mortars
Torpedo tubes	Originally 12—21 in (533 mm), 8 single A/S, 2 twin (now suppressed)
Boilers	2 Babcock & Wilcox
Main engines	2 sets d.r. geared turbines 30 430 shp; 2 shafts
Speed, knots	over 30
Complement	240 (13 officers, 227 ratings)

Taranaki was ordered direct (announced by J. Samuel White & Co on 22 Feb 1957). For Otago New Zealand took over the contract (officially stated on 26 Feb 1957) for Hastings, originally ordered from John I. Thornycroft & Co in Feb 1956 for the Royal Navy. Both vessels are generally similar to those in the Royal Navy, but were modified to suit New Zealand conditions.

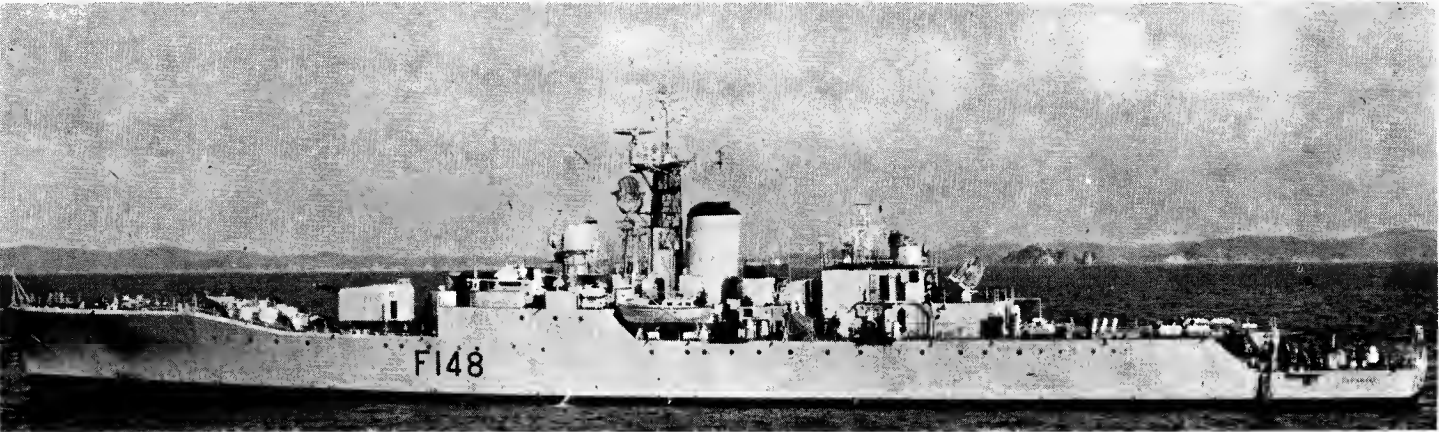


OTAGO

1966, Royal New Zealand Navy, Official

DISPOSALS. Of the six anti-submarine frigates of the "Loch" class, purchased from Great Britain in 1948, and renamed after New Zealand lakes, Taupo and Tutira were sold for scrap on 15 Dec 1961, Hawea and Pukaki

were sold for scrap at Hong Kong in Sep 1965, Rotoiti was taken out of commission on 29 July 1965 and is to be scrapped at Hong Kong, and Kanieri, latterly used as an alongside training ship at Auckland, was disposed of in 1967.



TARANAKI ("Seacat" guided missile launcher on step of after superstructure)

1966, Royal New Zealand Navy, Official

ESCORT MINESWEEPERS

4 "Bathurst" Class

Name	No.	Builders	Laid down	Launched	Completed
ECHUCA	M 252	Williamstown Dockyard, Melbourne	22 Feb 1941	17 Jan 1942	17 Jan 1943
INVERELL	M 233	Mort's Dock, Sydney	7 Dec 1941	2 May 1942	2 May 1943
KIAMA	M 353	Evans Deakins, Brisbane	2 Nov 1942	3 July 1943	26 Jan 1944
STAWELL	M 348	Williamstown Dockyard, Melbourne	18 June 1942	3 Apr 1943	7 Aug 1943

Displacement, tons	790 standard; 1 025 full load
Length, feet (metres)	162 (49.4) pp; 186 (56.7) oa
Beam, feet (metres)	31 (9.4)
Draught, feet (metres)	9.5 (2.9)
Guns, surface	1—4 in (102 mm), see notes
Guns, AA	1—40 mm
Boilers	2 Admiralty 3-drum small tube
Main engines	Triple expansion, 1 800 ihp; 2 shafts
Speed, knots	15
Complement	85

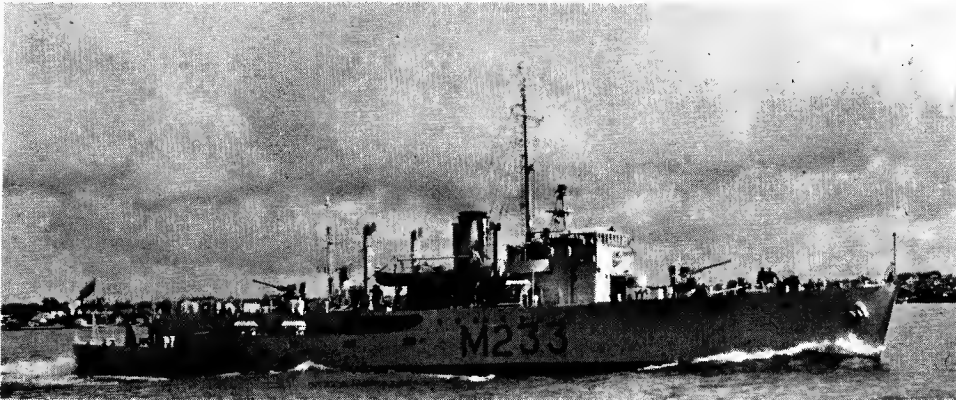
These four vessels were given to New Zealand by Australia in 1952.

Kiama was recommissioned on 15 Mar 1966 for training and fishery protection duties, her 4-inch gun being replaced by a 40 mm AA gun, and a deckhouse being built aft.

Inverell was recommissioned on 15 Aug 1965 as a training ship for new entry ratings, replacing the frigate Rotoiti. Her sweeping gear was removed and her deckhouse extended further aft.

PHOTOGRAPHS. A photograph of Kiama appears in the 1953-54, 1954-55 and 1955-56 editions, of Echuca in the 1953-54 to 1959-1960 editions, and of Stawell in the 1956-57 to 1965-66 editions.

COASTAL MINESWEEPERS. The Royal Navy coastal minesweepers HICKLETON and SANTON, which were manned by the Royal New Zealand Navy, commissioning at Singapore on 10 Apr 1965 for patrol duties in Malaysian waters, reverted to the Royal Navy in late 1966 and returned to the United Kingdom.



INVERELL

1966, Royal New Zealand Navy, Official

DISPOSALS OF LIGHT CRUISERS

Of the two light cruisers of the Improved "Dido" class lent to New Zealand by Great Britain, Black Prince reverted to Royal Navy control in Dec 1961 and was

scrapped in Japan in May 1962, and Royalist was taken out of commission on 4 July 1966 and reverted to the control of the Royal Navy for disposal.

SURVEY SHIP (Ex-Frigate)

1 "River" Class

	Name	No.	Builders	Launched	Transferred
	LACHLAN	F 364	Mort's Dock, Sydney, NSW	25 Mar 1944	1962

Displacement, tons 1 420 standard; 2 220 full load

Length, feet (metres) 301.2 (91.8)

Beam, feet (metres) 36.7 (11.2)

Draught, feet (metres) 12 (3.7)

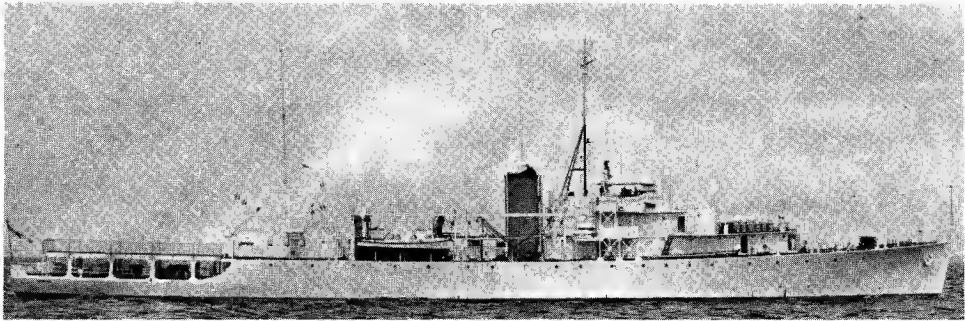
Boilers 2 Admiralty 3-drum

Main engines Triple expansion

5 500 ihp; 2 shafts

Speed, knots 20

Complement 140



Former Australian "River" class frigate. On loan until she was purchased outright in 1962. She is employed surveying the New Zealand coast. Her forecastle deck was subsequently extended aft from the shelter deck to the quarter deck. Guns were removed on conversion for survey duties. A helicopter platform 50 feet by 30 feet, standing 7 feet above the quarter deck, was added in 1966

LACHLAN

1967, Royal New Zealand Navy, Official

PATROL VESSEL

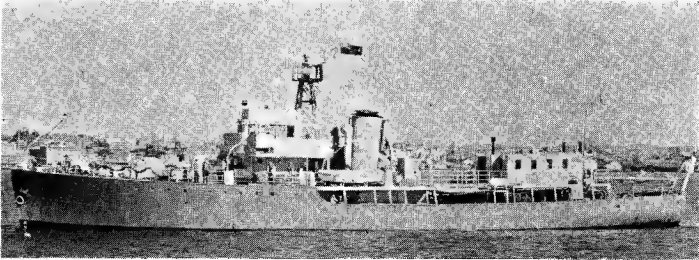
1 "Bird" Class (Corvette type)

TUI P 33

Displacement, tons	600 standard; 825 full load
Dimensions, feet	156 x 30 x 14
Guns	1—4 in; 1—2 pdr
Main engines	Triple expansion; 1 000 ihp = 14 knots
Boilers	1 cylindrical
Complement	55

Anti-Submarine and Minesweeping Trawler of the corvette type. Built by Henry Robb Ltd, Leith. Laid down on 19 Mar 1940. Launched on 26 Aug 1941. Completed on 5 Dec 1941. Engined by Plenty & Son. Commissioned as a Fleet Auxiliary for duties in Oceanographical Research.

DISPOSAL
Sister ship *Kiwi* was sold in 1962, and broken up in Auckland in 1965.



TUI 1965, Royal New Zealand Navy, Official

ANTARCTIC SUPPORT SHIP

ENDEAVOUR (ex-USS *Namakagon*, AOG 53) A 184

Displacement, tons	1 850 light; 4 335 full load
Dimensions, feet	292 wl; 310.8 oa x 48.7 x 15.7
Main engines	GM diesels; 2 shafts; 3 300 bhp = 14 knots
Complement	70 officers and ratings

Former US "Patapsco" class petrol carrier. Built by Cargill, Inc, Savage, Minn. Laid down on 1 Aug 1944. Launched on 4 Nov 1944. Refitted and strengthened for service in ice and transferred on loan to the Royal New Zealand Navy in Oct 1962 under the Military Aid Program and re-named *Endeavour*.



ENDEAVOUR 1966, Royal New Zealand Navy, Official

SEAWARD PATROL CRAFT

12 HDML Type

HAKU ex- <i>Wakefield</i> (SDML 3565) ex-Q 1197	NGPONA (SDML 3555, ex- <i>Viti</i> , ex-Q 1193)
KAHAWAI , (ex- <i>Tamaki</i> (SDML 3553) (SDML 3551, ex-Q 1183)	PAEA (SDML 3552, ex-Q 1184)
MAKO (SDML 3567, ex-Q 1185)	PEGASUS (SDML 3563, ex-Q 1348)
MANGA (SDML 3567, ex-Q 1185)	TAKAPU (SDML 3556, ex-Q 1188)
MARORO (ex- <i>Iirangi</i> (SDML 3554, ex-Q 1192)	TARAPUNGA (SDML 3566, ex-Q 1387)
	TOROA (SDML 3564, ex-Q 1350)

Displacement, tons	46 standard; 54 full load
Dimensions, feet	72 x 16 x 5.5
Guns	1—20 mm AA; several MG (not fitted at present)
Main engines	Diesel; 2 shafts; 320 bhp = 12 knots
Complement	12

Originally known as Harbour Defence Motor Launches. All built in various yards in the United States and Canada and shipped to New Zealand. *SDMLs Takapu* and *Tarapunga* are commissioned as surveying MLs, and operate with *Lachlan*. *SDMLs Mako*, *Manga* and *Paea* have been converted with lattice masts surmounted by a radar aerial, and are employed on fishery protection duties. *SDML 3565* is American built. A photograph of *Mako* appears in the 1958-59 to 1962-63 editions, and of *Paea* in the 1963-64 to 1965-66 editions.



MANGA (lattice mast and radar) 1966, Royal New Zealand Navy, Official

DISPOSAL OF FORMER ANTARCTIC SUPPORT SHIP
HMNZS *Endeavour* (ex-MV *John Briscoe*, ex-HMS *Pretext*, ex-USS *AN 76*), former netlayer, boom defence vessel, survey ship, and Antarctic support ship in turn, was declared surplus and sold in 1961.

TENDERS

ARATAKI

MANAWANUI

Steel tugs. Length: 75 feet. Diesel. *Arataki* is used as a dockyard tug and *Manawanui* as a diving tender.

DISPOSALS
The lighthouse tender *Hauraki* (ex-*Endeavour*) was officially deleted from the list in 1964.

Of the two naval stores carriers, *Lander 1* was officially deleted from the list in 1964, and *Coastguard* was sold as a fishing boat on 7 July 1961. The two former Fairmile "B" Type motor launches *Maori* and *Philomet*, converted to local naval transports and passenger harbour craft, were officially stricken from the list in 1964.

NICARAGUA

The Coast Guard is under the authority of the National Guard. It is reported to consist of six wooden patrol boats, four 90 feet and two about 80 feet long. There is also a former patrol boat 75 feet, wooden, built in 1925, used for training. There are small patrol boats on the east and west coasts to prevent smuggling.

NIGERIA

Strength of the Fleet

1 Frigate 1 Patrol Vessel 4 Seaward Defence Boats 1 Minesweeping Launch 1 Landing Craft 3 Survey Craft

Administration

Commodore Commanding Nigerian Navy: Commodore Joseph Etim Akinwale Wey

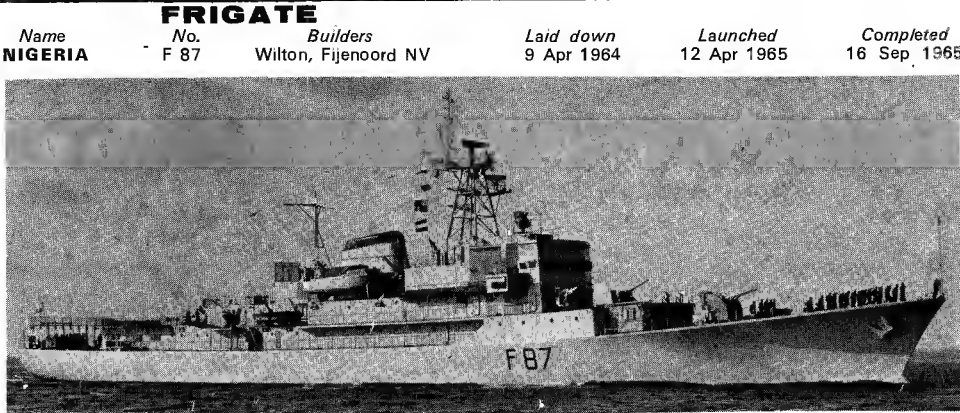
Personnel

1967: 100 Officers and 1,200 ratings (official figures)

1 A/S and AA Type

Displacement, tons 1 724 standard; 2 000 full load
Length, feet (metres) 341.2 (104.0) pp; 360.2 (109.8) oa
Beam, feet (metres) 37 (11.3)
Draught, feet (metres) 11 (3.3)
Guns, dual purpose 2—4 in (102 mm) twin mounting.
Guns, AA 4—40 mm single mountings
A/S 1—triple-barrel DCM
Main engines 4 MAN diesels
16 000 bhp; 2 shafts
Speed, knots 26
Complement 216

Anti-aircraft and anti-submarine frigate built in the Netherlands. Cost £3 500 000. Commissioned in Sep 1965. Helicopter platform laid on aft.



NIGERIA

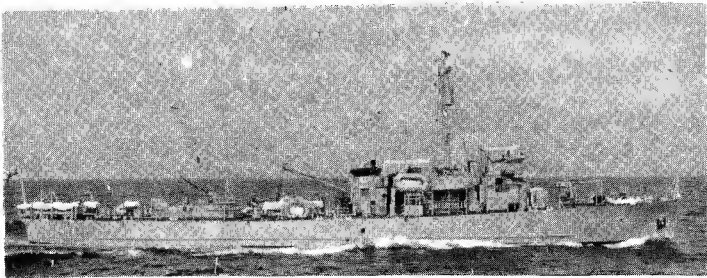
Wright & Logan

PATROL VESSEL

OGOJA (ex-Queen Wilhelmina, ex-USS PC 468)

Displacement, tons 320 standard; 413 full load
Dimensions, feet 165 wl; 173.7 oa x 23 x 6.5
Guns 1—3 in dp; 1—40 mm AA; 5—20 mm AA
Main engines Fairbanks diesel; 2 shafts; 2 880 bhp = 20 knots
Oil fuel, tons 60
Complement 70

Given by the Royal Netherlands Navy to the Nigerian Navy. The former United States submarine chaser was built by Geo Lawley & Sons, Neponset, Mass, having been launched on 30 Apr 1942.



OGOJA

1965, Nigerian Navy, Official

SEAWARD DEFENCE BOATS

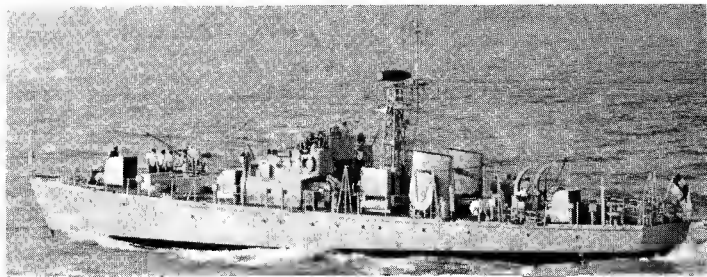
4 "Ford" Class

BENIN (ex-HMS Hinksford)
ENUGU P 3137

IBADAN (ex-HMS Montford)
KADUNA (ex-HMS Axford)

Displacement, tons 120 standard; 160 full load
Dimensions, feet 110 pp; 117.2 oa x 20 x 5
Guns 1—40 mm Bofors AA
A/S weapons DC rails and DC
Main engines Davey Paxman diesels; Foden engine on centre shaft;
1 100 bhp = 18 knots max; 15 knots sea speed
Complement 26

Enugu was the first warship built for the Nigerian Navy. Ordered from Camper and Nicholson's, Gosport, in 1960. Completed on 14 Dec 1961 (accepted from builders). Sailed from Portsmouth for Nigeria on 10 Apr 1962. Fitted with Vosper roll damping fins. Benin, Ibadan and Kaduna were purchased from Great Britain on 1 July 1966 and transferred at Devonport on 9 Sep 1966.



ENUGU

1965, courtesy Dr Giorgio Arra

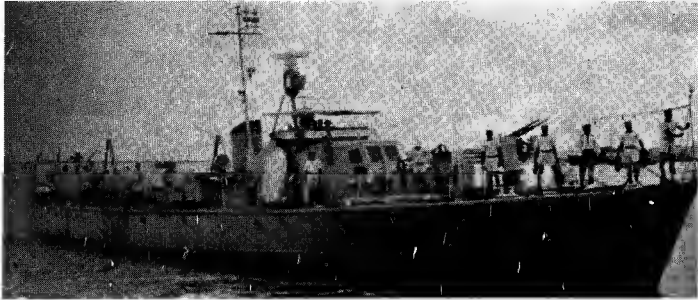
Kaduna (ex-HMS SDML 3515) P 07 was officially deleted from the Navy List in 1965. Nigeria, former British "Algerine" class escort minesweeper, HMS Hare, transferred to the Nigerian Navy on 21 July 1959, was scrapped in Oct 1962. The Presidential Yacht, NNS Valiant transferred to the Nigerian Inland Waterways Department in 1966. See particulars in the 1960-61 to 1965-66 editions.

MINESWEEPING LAUNCH

CALABAR (ex-MSML 2223) P 08

Displacement, tons 85
Dimensions, feet 112 oa x 18.2 x 5
Guns 2—20 mm AA (twin mounting)
Main engines 2 Paxman diesels; 1 200 bhp = 13 knots; sea 8 knots

Purchased from Great Britain in 1959. Fairmile "B" type. Used for training. Sister launch Sapele (ex-MSML 2217) P 08 was disposed of in Feb 1967.



CALABAR

1967, Nigerian Navy, Official

LANDING CRAFT

LOKOJA (ex-LCT (4) 1213)

Displacement, tons 350 standard; 586 full load
Dimensions, feet 187.5 x 38.8 x 4.5
Guns 2—20 mm AA
Main engines 2 Paxman diesels; 920 bhp = 10 knots

Purchased from Great Britain in 1959. Allocated the name Lokoja in 1961. Underwent a major refit in 1966-67, including complete replating of the bottom.



LOKOJA

1965, Nigerian Navy, Official

SURVEY CRAFT

PATHFINDER P 06

Measurement, tons 544 gross
Dimensions, feet 154.2 x 27 x 11
Guns 1—40 mm AA
Main engines 2 triple expansion; 200 ihp = 8 knots

Built by J. Samuel White & Co Ltd, Cowes, Isle of Wight, in 1954.

PENELOPE P 11

Measurement, tons 79 gross
Dimensions, feet 79.5 x 7.8 x 4.5
Main engines 2 Gardner diesels; speed 10 knots

Built by Aldous Successors, Brightlingsea in 1958. Used for local survey duties.

CHALLENGER P 10

Measurement, tons 114 gross
Dimensions, feet 110.5 x 18.5 x 5
Guns 1—40 mm AA Bofors AA
Main engines 3 Gleniffer diesels; speed 13 knots

Built by Aldous Successors, Brightlingsea in 1955. Custom's preventive duties.

ROYAL NORWEGIAN NAVY

Administration

Minister of Defence:
Mr Otto Grieg Tidemand, DFC

Permanent Under-Secretary:
Mr Eric Himle

Commander-in-Chief:
Vice Admiral Aimar Sörenssen, RNoN

Chief of Naval Staff:
Rear-Admiral Tore Holthe RNoN

Commander Coastal Fleet
Commodore Sjur Østervold, DSC RNoN

Chief of Staff (Operations):
Commodore Sigurd Valvatne, DSO DSC,, RNoN

Strength of the Fleet

- 15 Coastal Submarines (Diesel Powered)
- 5 Frigates (Destroyer Escort Type)
- 4 Coastal Minelayers (ex-Ocean Minesweepers)
- 2 Patrol Vessels (Submarine Chasers)
- 10 Coastal Minesweepers (Non-Magnetic)
- 26 Motor Torpedo Boats
- 5 Gunboats (Fast Patrol Boats)
- 15 Fleet Support Ships and Service Craft

Diplomatic Representation

Defence Attaché in London:
Colonel Ole Tobias Mehn-Andersen, DFC, RNoAF

Assistant Defence (Naval) Attaché in London:
Commander Julius Johan Meyer, RNoN

Naval Attaché in Washington:
Captain Charles Oluf Herlofson, RNoN

Personnel

- 1967 : 6,000 officers and ratings
- 1966 : 6,200 officers and ratings
- 1965 : 6,000 officers and ratings
- 1964 : 6,300 officers and ratings
- 1963 : 6,300 officers and ratings
- 1962 : 5,200 officers and ratings

Ships

Norwegian warships are referred to officially with the Prefix KNM, equivalent to HMS. Since Mar 1959 the suffix "RNoN" has been used instead of "RNorN"

Mercantile Marine

Lloyd's Register of Shipping :
2,786 ships of 16,421,123 tons gross

Silhouettes

Scale: 150 feet= 1 inch



OSLO Class



HAAKON VII



BRAGE, GOR, TYR, ULLER

SUBMARINES (Undervannsbater)

15 "Kobben" Class Coastal Type

Name	No.	Launched	Completed
KAURA	S 315	16 Oct 1964	5 Feb 1965
KINN	S 316	30 Nov 1963	8 Apr 1964
KOBZEN	S 318	25 Apr 1964	17 Aug 1964
KUNNA	S 319	16 July 1964	1 Oct 1964
KYA	S 317	20 Feb 1964	15 June 1964
SKLINNA	S 305	21 Jan 1966	27 May 1966
SKOLPEN	S 306	24 Mar 1966	17 Aug 1966
STADT	S 307	10 June 1966	15 Nov 1966
STORD	S 308	2 Sep 1966	9 Feb 1967
SVENNER	S 309	27 Jan 1967	1 July 1967
ULA	S 300	19 Dec 1964	7 May 1965
UTHAUG	S 304	8 Oct 1965	16 Feb 1966
UTSIRA	S 301	11 Mar 1965	1 July 1965
UTSTEIN	S 302	19 May 1965	9 Sep 1965
UTVAER	S 303	30 June 1965	1 Dec 1965

Displacement, tons 350 standard ; 472 submerged
Length, feet (metres) 149 (45.4)
Beam, feet (metres) 15 (4.6)
Draught, feet (metres) 14 (4.3)
Tubes 8—21 in (533 mm) bow
Main engines 2 M8 820 Maybach-Mercedes-Benz diesels ; 1 200 bhp ; electric drive ; 1 200 hp ; 1 shaft
Speed, knots 17
Complement 18 (5 officers, 13 men)

It was announced in July 1959 that the USA and Norway would share equally the cost of these submarines ordered under a modernisation programme, for delivery in 1964-67. All were built by Rhein Stahl-Nordseewerke in Emden, West Germany. Of the same type as the German U 4 class but with stronger hulls to dive deeper.

NOMENCLATURE. These boats were given names perpetuating those of submarines which recently served in the Royal Norwegian Navy but have been discarded (see Disposals below), and some new names.

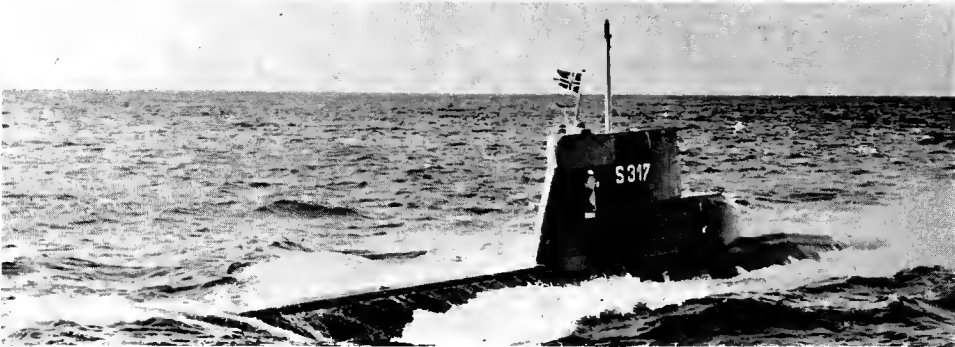
The "U" group were named after features of the Norwegian seaboard, Ula being the name of the birthplace of Ulbrand the navigator.

TRANSFER. The German submarine U 3, lent to the Royal Norwegian Navy in 1962 for training and temporarily named Kobben, S 310, was returned to the Federal German Navy in 1964. A new submarine for the Royal Norwegian Navy named Kobben, S 318 was completed in 1964 (see above).



UTSTEIN

1966, Royal Norwegian Navy, Official



KYA

1965, Royal Norwegian Navy, Official

DISPOSALS

Of the former British "U" class, Utsira (ex-HMS Variance) was stricken from the Navy List in Dec 1962, Utstein (ex-HMS Venturer) in Jan 1964, Ula (ex-HMS Varne) in July 1964, Utvaer (ex-HMS Viking) in Dec 1964, and Uthang (ex-HMS Votary) in Oct 1965.

DISPOSALS OF EX-GERMAN VII C TYPE

Of the ex-German VII C type, Kinn (ex-U 1202) was removed from the Royal Norwegian Navy List on 1 June 1961, Kaura (ex-U 995) in Jan 1963, and Kya (ex-U 926) in Mar 1964.

FRIGATES

5 New Construction
Destroyer Escort Type
"Oslo" Class

Name	No.	Builders	Laid down	Launched	Completed
BERGEN	F 301	Marinens Hovedverft, Horten	1964	23 Aug 1965	15 June 1967
NARVIK	F 304	Marinens Hovedverft, Horten	1964	8 Jan 1965	30 Nov 1966
OSLO	F 300	Marinens Hovedverft, Horten	1963	17 Jan 1964	29 Jan 1966
STAVANGER	F 303	Marinens Hovedverft, Horten	1965	4 Feb 1966	1 Dec 1967
TRONDHEIM	F 302	Marinens Hovedverft, Horten	1963	4 Sep 1964	2 June 1966

Displacement, tons	1 450 standard; 1 745 full load (revised official figures)
Length, feet (metres)	308 (93.9) pp; 317 (96.6) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	17.4 (5.3)
Guns, dual purpose	4—3 in (76 mm) 2 twin mounts
A/S weapons	"Terne" system
Torpedo launchers	2
Boilers	2 Babcock & Wilcox
Main engines	1 set De Laval Ljungstrom double reduction geared turbines; 1 shaft; 20 000 shp
Speed, knots	25
Complement	151 (11 officers, 140 ratings)



TRONDHEIM

1967, Royal Norwegian Navy, Official

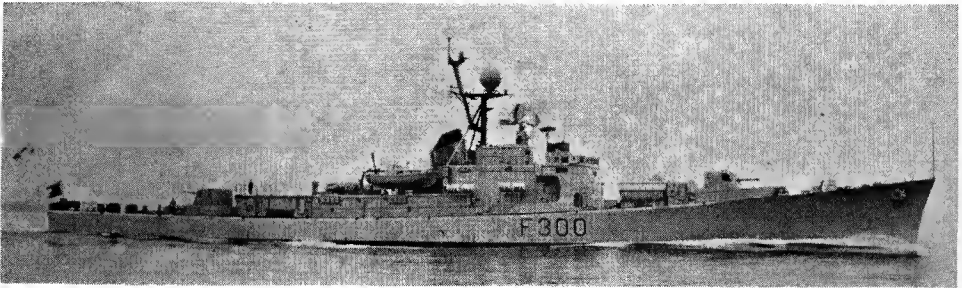
Built under the five-year naval programme accepted by the Norwegian "Storting" (Parliament) late in 1960. Although all the ships were constructed in the Norwegian Naval Dockyard, half the cost was borne by Norway and the other half was paid by the United States. The design of these ships is similar to that of the "Dealey" class destroyer escorts in the United States Navy. They have traditional Norwegian destroyer or torpedo boat names.

Engineering. The turbines, of a new type, and auxiliary machinery were all built by De Laval Ljungstrom, Sweden, at the company's works in Stockholm-Nacka.

DISPOSALS OF "Cr" CLASS DESTROYERS
Of the former British destroyers of the "Cr" class, *Trondheim* (ex-HMS *Croziers*) was removed from the Navy List on 1 May 1961, *D 303* (ex-*Oslo*, ex-HMS *Crown*) was removed from the list and scrapped in 1966, and *Bergen* (ex-HMS *Cromwell*, ex-*Cretan*) and *Stavanger* (ex-HMS *Crystal*) were stricken from the Navy List on 1 Jan 1967.

The former British destroyer *Stord* (ex-HMS *Success*) of the "S" class, purchased from Great Britain in 1946 was stricken from the Navy List in 1959.

DISPOSALS OF "HUNT" CLASS
Of the three former British escort destroyers or frigates of



OSLO

1966, Royal Norwegian Navy, Official

the "Hunt" Class, Type II, *Haugesund* (ex-HMS *Beaufort*) and *Tromsø* (ex-HMS *Zetland*) were removed from the list in 1965 and sold, and *Arendal* (ex-HMS *Bads-worth*) was removed from the list on 1 May 1961. The former British escort destroyer *Narvik* (ex-HMS *Glaidsdale*) of the "Hunt" class, Type III, was removed from the list on 1 May 1961.

DISPOSALS OF "RIVER" CLASS
Of the three former Canadian frigates of the "River" Class, *Draug* (ex-HMCS *Penetang*) was removed from the list and sold in 1966, and *Garm* (ex-HMCS *Toronto*) and *Troll* (ex-HMCS *Prestonian*) were converted, respectively, into Torpedo Boat Depot Ship and Submarine Depot Ship in 1964 and 1965 and renamed *Valkyrien* and *Horten*, see later page.

TRAINING SHIP

Name	No.	Builders	Laid down	Launched	Completed
HAAKON VII (ex-US <i>Gardiners Bay</i> , AVP 39)	A 537	Lake Washington Shipyard, Houghton, Wash	14 Mar 1944	2 Dec 1944	11 Feb 1945

1 Ex-U.S. AVP Type

Displacement, tons	1 766 standard; 2 800 full load
Length, feet (metres)	300 (91.4) wl; 310.8 (94.7) oa
Beam, feet (metres)	41.2 (12.7)
Draught, feet (metres)	13.5 (4.1) max
Guns, surface	1—5 in (127 mm)
Guns, AA	8—40 mm; 4—20 mm
Main engines	2 F-M diesels
	6 080 bhp; 2 shafts
Speed, knots	18.2
Complement	215, plus 86 officer cadets and petty officer apprentices
	Accommodation for 367

Formerly a United States seaplane tender (small) of the AVP type. Transferred from the United States Navy to the Royal Norwegian Navy on 17 May 1958 and converted and rearmed for use as a training ship for midshipmen and naval cadets. The sonar training ship *Pingvin* (ex-*Draug*, ex-German *Pommern*) was taken out of commission on 21 Sep 1963 and has been removed from the Navy List.



HAAKON VII

1959, Wright & Logan

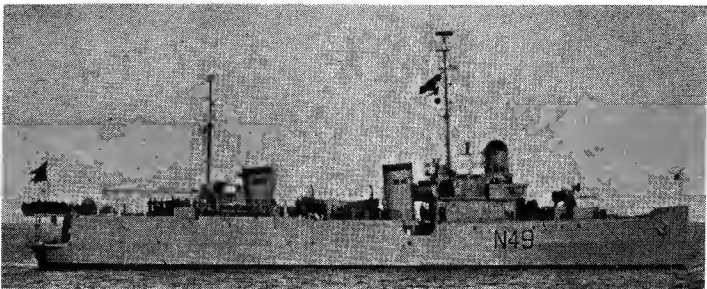
COASTAL MINELAYERS

4 "Gor" Class (ex-U.S. MSF Type)

BRAGE (ex-USS <i>Triumph</i> , MMC 3, ex-MSF 323, ex-AM 323)	
GOR (ex-USS <i>Strive</i> , MMC 1, ex-MSF 117, ex-AM 117)	
TYR (ex-USS <i>Sustain</i> , MMC 2, ex-MSF 119, ex-AM 119)	
ULLER (ex-USS <i>Seer</i> , MMC 5, ex-MSF 112, ex-AM 112)	
Displacement, tons	890 standard; 1 250 full load
Dimensions, feet	215 wl; 221.2 oa x 32.2 x 16 max
Guns	<i>Brage, Gor, Tyr</i> : 1—3 in, 50 cal; 4—20 mm AA (2 twin); <i>Uller</i> : 1—3 in, 50 cal; 1—40 mm AA
A/S weapons	<i>Brage, Gor, Tyr</i> : 2 Hedgehogs; 3 DCT <i>Uller</i> : "Terne" ASW system; 1 DCT
Main engines	GM diesels with electric drive; 2 shafts 2 070 bhp = 16 knots
Complement	83

Former US Coastal Minelayers (MMC) originally built as Ocean Minesweepers (AM) of the large steel-hulled type ("Auk" class) reclassified as Fleet Minesweepers (MSF) in Feb 1955. *Gor, Tyr* and *Uller* were built by the American Shipbuilding Co, Cleveland Ohio, and *Brage* by Associated Shipbuilders. *Gor* and *Tyr* were converted into coastal minelayers at Charleston Naval Shipyard for transfer to the Royal Norwegian Navy under MAP late in 1959, and *Brage* was converted at the same yard in 1960, but *Uller* was converted at a Norwegian shipyard.

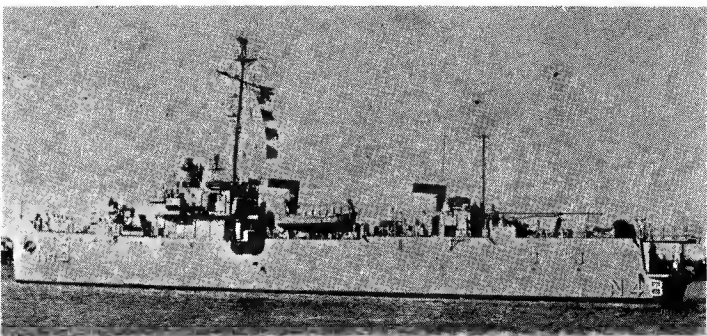
Name	No.	Laid down	Launched	Completed
<i>Brage</i>	N 49	27 Oct 1942	25 Feb 1943	3 Feb 1944
<i>Gor</i>	N 48	17 Nov 1941	16 May 1942	27 Oct 1942
<i>Tyr</i>	N 47	17 Nov 1941	23 June 1942	9 Nov 1942
<i>Uller</i>	N 50	28 Nov 1941	23 May 1942	21 Oct 1942



BRAGE 1966, courtesy Godfrey H. Walker, Esq



TYR 1963, Wright & Logan



GOR 1960, Royal Norwegian Navy, Official

DISPOSALS. The two coastal minelayers of the "Otra" class, *Otra* and *Rauma*, were stricken from the Navy List in Apr 1963. The two coastal minelayers of the converted US LSM type, *Vale* (ex-USS *LSM* 492) and *Vidor* (ex-USS *LSM* 493), were returned to USA on 1 Oct 1960, and transferred to Turkey under MAP in Nov 1960. The two auxiliary minelayers of the converted British tank landing craft type, *Reinøysund* and *Vargsund* were removed from the Navy List in 1960.

TRANSFER OF OCEAN MINESWEEPERS. The two ocean minesweepers of the US MSO type, *Lagen* (ex-MSO 498) and *Namsen* (ex-MSO 499), taken over by the Royal Norwegian Navy on 27 Sep and 1 Nov 1955, respectively, were transferred to the Royal Belgian Navy in 1966, having been exchanged against three coastal minesweepers of the Belgian US MSC type, see "Sauda" class in col 2.

DISPOSALS OF FLEET MINESWEEPERS. The two former British "Bangor" class fleet minesweepers of the diesel type were removed from the Navy List, *Tana* on 1 May 1961 and *Glomma* on 1 Dec 1961.

PATROL VESSELS

2 "Sleipner" Class. Corvette Type

AEGER P 951	SLEIPNER P 950
Displacement, tons	600 standard; 780 full load
Dimensions, feet	227.8 oa x 26.2
Guns	1—3 in; 1—40 mm
A/S weapons	"Terne" ASW system
Main engines	4 Maybach diesels; 2 shafts; 9 000 bhp = over 20 knots
Complement	62

Submarine chasers of the corvette type. Under the five-year programme only two instead of the originally planned five new patrol vessels were built. *Sleipner* was launched on 9 Nov 1963 at the Nylands Verksted shipyard, Oslo, and completed on 29 Apr 1965. *Aeger*, originally to have been named *Balder*, was launched on 24 Sep 1965, and completed on 31 Mar 1967.



SLEIPNER 1967, Royal Norwegian Navy, Official

COASTAL MINESWEEPERS

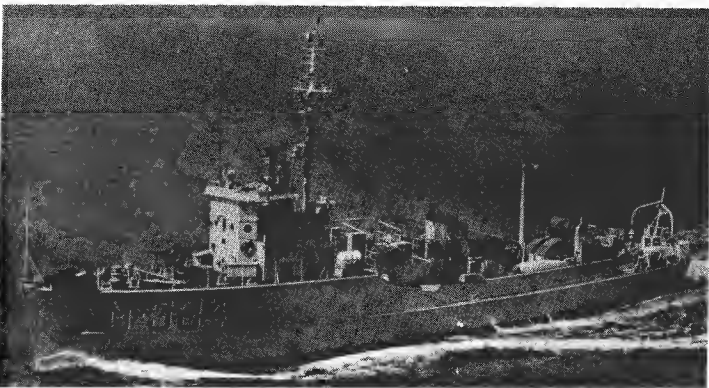
10 "Sauda" Class U.S. MSC (ex-AMS) Type

ALTA M 314	OGNA M 315	TANA M 313
GLOMMA M 317	SAUDA (ex-USS <i>AMS</i> 102) M 311	TISTA M 331
KVINA M 332	SIRA (ex-USS <i>MSC</i> 132) M 312	UTLA M 334
		VOSSO M 316

Displacement, tons	333 standard; 384 full load
Dimensions, feet	144 x 28 x 8.5 max
Guns	2—20 mm AA
Main engines	GM diesels; 880 bhp = 13.5 knots
Oil fuel, tons	25
Complement	38

Sauda was launched in July 1953 by Hodgeson Bros, Gowdy & Stevens, East Boothbay, Maine and completed on 25 Aug 1953. *Sira* was completed 28 Nov 1955. Hull is of wooden construction. Five wooden coastal minesweepers of the non-magnetic type were built in Norway with engines from the USA. Launched on 21 July 1954 (*Kvina*), 18 June 1954 (*Ogna*), 1 June 1954 (*Tista*), 16 June 1954 (*Vasso*) and 2 Mar 1955 (*Ulla*), 12 July 1955 (*Kvina*) and and 15 Nov 1955 (*Ulla*). *Kvina*, *Ogna* and *Ulla* were built by Boøtservice Ltd, Mandal. *Tista* by Forende Batbyggerier, Risør and *Vosso* by Skaaluren Skibbyggeri, Rosendal.

TRANSFER AND EXCHANGE. *Alta*, *Glomma* and *Tana* were taken over from the Royal Belgian Navy in May, Sep and Mar 1966, respectively, having been exchanged against two Norwegian ocean minesweepers of the US MSO type. They were formerly *Arlon* M 915 (ex-*MSC* 104), *Bastogne* M 916 (ex-*MSC* 151) and *Roeselaere* M 914 (ex-*MSC* 103).



UTLA 1966, Skyfotos

CONTROLLED MINELAYERS

BORGEN N 51	
Displacement, tons	282 standard
Dimensions, feet	94.5 pp; 102.5 oa × 26.2 × 11
Main engines	2 GM diesels; 2 Voith-Schneider propellers; 330 bhp = 9 knots

Launched on 29 Apr 1960. Similar to the Swedish "MUL 12" type. There is also an old controlled minelayer. Both are coastal artillery ships and part of the Navy.

TORPEDO BOATS

20 "Tjeld" Class

DELFIN P 386	HAI P 381	LAKS P 384	SKARV P 344
ERLE P 390	HAUK P 349	LOM P 347	SKREI P 380
FALK P 350	HVAL P 383	LYR P 387	STEGG P 348
GEIR P 389	JO P 346	RAVN P 357	TEIST P 345
GRIBB P 388	KNURR P 385	SEL P 382	TJELD P 343

Displacement, tons	64 light; 70 standard; 82 full load
Dimensions, feet	75.5 pp; 80.3 oa x 24.5 x 6.8 max
Guns	1—40 mm AA; 1—20 mm AA
Tubes	4—21 in
Main engines	2 Napier Deltic Turboblown diesels; 2 shafts; 6 200 bhp = 45 knots
Radius, miles	450 at 40 knots; 600 at 25 knots
Complement	18 to 22

Built by 8oatservice Ltd, Oslo. The first boat, *Tjeld* was commissioned in June 1960, and the last boat of the first group of twelve in 1962. The first of the second group of eight built under the five year programme, *Sal*, was launched on 7 Mar 1963 and the last, *Delfin* on 7 Jan 1966 (she was commissioned on 20 May 1966) and all the 20 boats of this class are now completed. Formerly known as Motor Torpedo boats but officially classified as Torpedo Boats in 1965. A photograph of *Tjeld* appears in the 1961-62 and 1962-63 editions, and of *Gribb* in the 1963-64 to 1965-66 editions.

TRANSFERS. Two of this type were acquired by the USA in 1963 and renumbered PTF-3 and PTF-4, four in Apr 1964 (*PTF* 5 to 8) and eight in Sep 1964 (*PTF* 9 to 16).

DISPOSAL. The prototype *Nasty* was stricken from the Navy List in 1967, it is officially stated.



JO 1967, Royal Norwegian Navy, Official



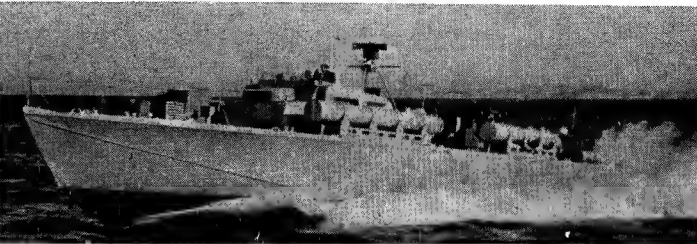
TEIST 1966, Wright & Logan

6 "Rapp" Class

KJAPP P 354	RAPP P 351	SNAR P 355
KVIKK P 353	RASK P 352	SNOGG P 356

Displacement, tons	72 standard
Dimensions, feet	87 x 23 x 5
Guns	1—40 mm; 1—20 mm AA
Tubes	4—21 in
Main engines	4 Packard petrol; 2 shafts; 4 800 bhp = 32 knots
Complement	18

Built by 8oatservice Ltd. Of wooden construction, *Rapp*, the prototype, was laid down in Aug 1951, launched on 7 May 1952 and completed on 18 Nov 1952. Five of the same type were built in 1953-56.



RAPP Royal Norwegian Navy, Official

DISPOSALS
10 Elco Type: The four remaining boats were removed from the list in 1966, their six sister boats having been scrapped in 1960-62.
8 Fairmile type: All scrapped in 1958-59. For full particulars of names, numbers and dates, see 1965-66 edition.
Most of the names of the Elco and Fairmile classes were taken by the new "Tjeld" class, see above.

GUNBOATS

20 New Construction "Storm" Class

ARG P 968	DJERV P 966	ODD P 975	STEIL P 969
BLINK P 961	GLIMT P 962	PIL P 976	STORM P 960
BRANN P 970	GNIST P 979	ROKK P 978	TRAUST P 973
BRASK P 977	HVASS P 972	SKJOLD P 963	TROSS P 971
BROTT P 974	KJEKK P 965	SKUDD P 967	TRYGG P 964

Displacement, tons	100 standard; 125 full load
Dimensions, feet	118 x 19.8 x 5
Guns	1—3 in; 1—40 mm
A/S weapons	Rocket throwers
Main engines	2 Maybach diesels; 7 200 bhp = over 30 knots
Complement	15

The first of the 20 (instead of the 23 originally planned) gunboats of a new design built under the five-year programme was *Storm*, launched on 8 Feb 1963, and completed on 31 May 1963, but this prototype was largely experimental and subject to design modifications. The first of the production boats was *Blink*, launched on 28 June 1965 and completed on 18 Dec 1965. Formerly known as Motor Gunboats, but officially reclassified as Gunboats in 1965.



BLINK 1966, Royal Norwegian Navy, Official

DEPOT SHIPS

2 Ex-Canadian Frigate Type

HORTEN (ex-Troll, ex-Prestonian)	VALKYRIEN (ex-Garm, ex-Toronto)
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Pennant No.	A 530 (ex-F 314)	A 535 (ex-F 315)
Builders	Davie Shipbuilding Co, Lauzon, PQ Canada	Davie Shipbuilding Co, Lauzon, PQ Canada
Launched	22 June 1944	18 Sep 1943
Completed	13 Sep 1944	6 May 1944
Transferred	10 Mar 1956	10 Mar 1956

Displacement, tons	1,570 standard; 2 240 full load
Dimensions, feet	301.3 x 36.5 x 16
Guns	<i>Horten</i> : 3—40 mm; <i>Valkyrien</i> : 2—4 in, 2—40 mm
Main engines	Triple expansion; 2 shafts; 5 500 ihp = 19 knots
Complement	<i>Horten</i> : 86; <i>Valkyrien</i> : 104

Former Canadian modernised "River" class frigates loaned to Norway in Mar 1956 and renamed, transferred outright early in 1959, and converted for use as depot ships and again renamed in 1965 and 1964, respectively, *Horten* for submarine support, and *Valkyrien* as parent ship for torpedo boats and gunboats.



HORTEN 1966, Royal Norwegian Navy, Official

DISPOSALS OF FORMER DEPOT SHIPS. The former depot ship for torpedo boats, *Valkyrien*, ex-commercial coastal passenger mail and freight carrier, was removed from the Navy List on 17 Dec 1963. The former depot ship and support tender for submarines, *Sarpen*, ex-German *Königsau*, was removed from the Navy List on 12 Dec 1964.

DISPOSALS OF AUXILIARIES. The battle damage repair ship of the converted American tank landing ship type, *Ellida* (ex-USS *ARB* 13, ex-USS *LST* 50), was returned to the US Navy on 1 July 1960, and transferred to the Royal Hellenic Navy on 16 Sep 1960 and renamed *Sakipis*. The former US utility landing craft *LCU* 1478 was removed from the Navy List in 1964.

FISHERY PROTECTION SHIPS

NORNEN

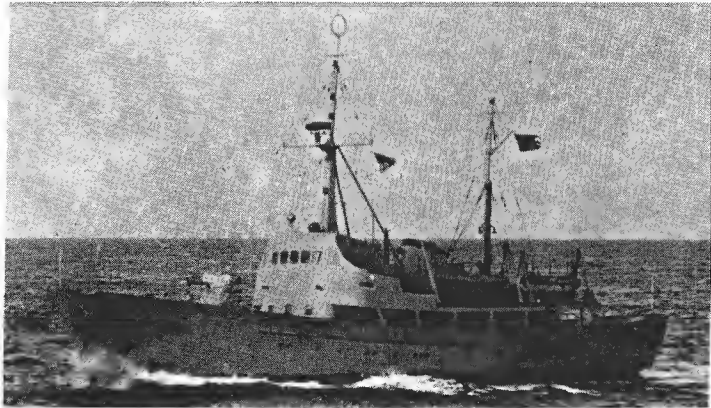
Measurement, tons	930 gross
Dimensions, feet	201·8 × 32·8 × 15·8
Guns	1—3 in (76 mm)
Main engines	4 diesels; 3 500 bhp = 17 knots
Complement	32

Built by Mjøllem & Karlsen, Bergen, Norway. Launched and completed in 1963.

FARM

Measurement, tons	600 gross
Dimensions, feet	177 × 26·2 × 16·5
Guns	1—3 in (76 mm)
Main engines	2 diesels; 2 700 bhp = 16 knots
Complement	29

Farm built by Ankerlökken Veft, Fiorö; Heimdal by Bolsones Verft, Molde, in 1962.



HEIMDAL 1966, Royal Norwegian Navy, Official

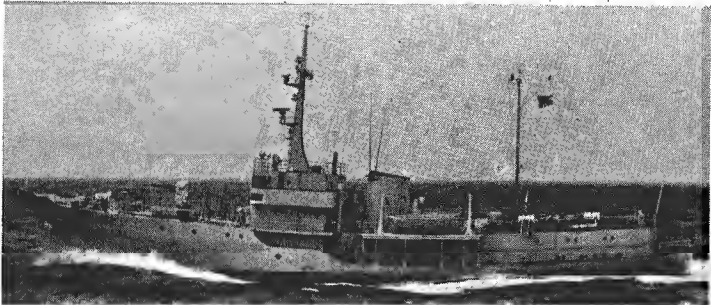
ANDENES

NORDKAPP

SENJA

Measurement, tons	500 gross
Dimensions, feet	186 × 31 × 16
Guns	1—3 in (76 mm)
Main engines	MAN diesel; 2 300 bhp = 16 knots
Complement	29

All three built in the Netherlands in 1957 as whalers. Acquired by Norway in 1965 and converted into Fishery Protection Ships.



ANDENES 1966, Royal Norwegian Navy, Official

WEATHER SHIPS

POLARFRONT I (ex-Saxifrage)

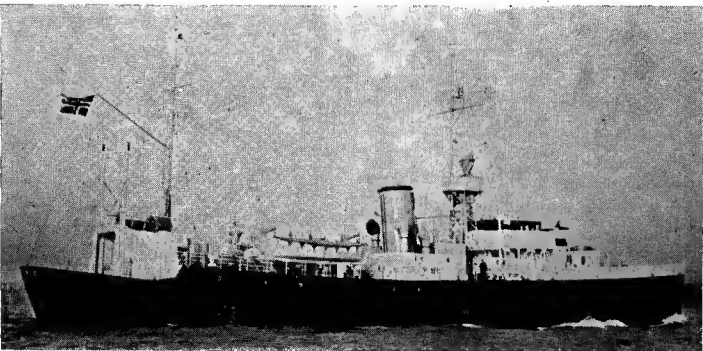
Builders	Charles Hill & Sons Ltd, Bristol
Laid down	1 Feb 1941
Launched	24 Oct 1941
Completed	6 Feb 1942

POLARFRONT II (ex-Bryony)

Harland & Wolff Ltd, Belfast
16 Nov 1940
15 Mar 1941
16 June 1942

Displacement, tons	1 060 standard; 1 300 full load
Dimensions, feet	205 oa × 33 × 14·5 max
Main engines	Triple expansion; 2 750 ihp = 16·5 knots
Boilers	2 SE
Oil fuel (tons)	350
Radius, miles	7 000 at 10 knots
Complement	46

Former British "Flower" class corvettes (later re-rated as frigates) transferred to Norway and employed as weather ships, but not on the Navy List.



POLARFRONT II K. Knudsen & Co, A/S Bergen, courtesy RNoN

OCEANOGRAPHIC RESEARCH SHIP

H. U. SVERDRUP

Displacement, tons	400
Measurement, tons	295 gross
Dimensions, feet	127·7 oa; 111·5 pp × 25 × 13
Main engines	Wichmann diesel; 600 bhp = 11·5 knots
Oil fuel (tons)	65
Radius, miles	5 000 at 10 knots cruising speed
Complement	10 crew; 9 scientists

Built by Örens Mekaniske Verksted, Trondheim. Laid down in Sep 1959, launched in Feb 1960, completed on 15 June 1960. Financed by the US Mutual Weapon Development Programme and operated by the Norwegian Defence Research Establishment. Steel hull, welded construction, controllable pitch propeller. She does not belong to the Royal Norwegian Navy, but is a Defence project.



H. U. SVERDRUP 1964, Norwegian Defence Research Establishment

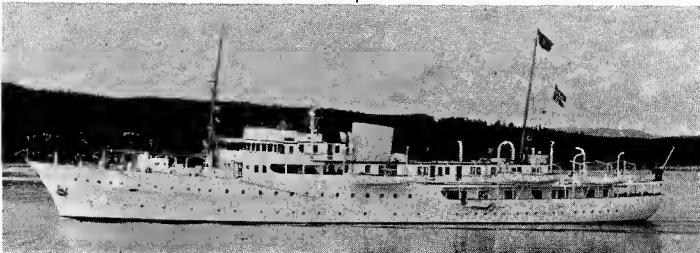
ROYAL YACHT

1 Ex-British Escort Type

NORGE (ex-Philante) A 533

Measurement, tons	1 686 (Thames yacht measurement)
Dimensions, feet	250·2 pp; 263 oa × 28 × 15·2
Main engines	B-cyl diesels; 2 shafts; 3 000 bhp = 17 knots

Built by Camper & Nicholson's Ltd, Gosport, England, to the order of the late Mr T. O. M. Sopwith as escort and store vessel for the yachts Endeavour I and Endeavour II. Launched on 17 Feb 1937. Served in the British Navy as an anti-submarine escort during the Second World War, after which she was purchased by the Norwegian people for King Haakon at a cost of nearly £250 000 and reconditioned as a Royal Yacht at Southampton. Can accommodate about 50 people in addition to crew.



NORGE 1965, Royal Norwegian Navy, Official

ICEBREAKER

1 Projected

A new naval icebreaker is planned under the new construction programme, but she is not being proceeded with for the time being.

PANAMA

Base

Under the 1955 Treaty the United States occupied the Rio Hato base.

Mercantile Marine

Lloyd's Register of Shipping: 702 ships of 4,543,071 tons gross

COAST GUARD PATROL VESSELS

2 U.S. Small C.G. Utility Type

Displacement, tons	35
Dimensions, feet	69 × 14 × 5
Guns	1 MG
Main engines	400 hp = 13 knots
Complement	10

Two small craft purchased from the United States Government in 1947. Two coast guard utility boats were transferred to Panama by the USA at the US Naval Station, Rodman, Canal Zone, in June 1962. There is a Navy fire-fighting tug. One or two US service boats are also reported.

PAKISTAN

Administration
Commander-in-Chief, Pakistan Navy, and Chief of the Naval Staff:
Vice-Admiral Afzal Rehman Khan, HPk, HJ, HQA
Deputy Chief of Naval Staff (Operations):
Commodore S. A. Rauf, SK, PN
Commodore Commanding P. N. Flotilla:
Commodore Muzaffar Hasan, SK, PN

Strength of the Fleet
1 Submarine, 1 Light Cruiser, 5 Destroyers, 2 Frigates, 1 Survey Ship, 8 Coastal Mine-sweepers, 6 Patrol Boats, 7 Auxiliaries.
Diplomatic Representation
Naval Adviser, High Commission, London:
Commander K. M. Hussain, PN
Naval Attaché in Washington:
Captain Anwar Saeed, PN

Personnel
1963: 7,700 (700 officers; 7,000 ratings)
1964: 8,250 (750 officers; 7,500 ratings)
1965: 8,350 (790 officers; 7,560 ratings)
1966: 8,680 (820 officers; 7,860 ratings)
1967: 9,000 (820 officers; 8,180 ratings)
Mercantile Marine
Lloyd's Register of Shipping:
147 vessels of 434,093 tons gross

Silhouettes

Scale: 150 feet = 1 inch



BABUR



SHAH JAHAN



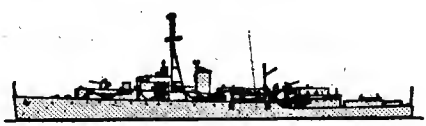
BADR, KHAIBAR



TIPPU SULTAN, TUGHRIL



ALAMGIR, JAHANGIR



ZULFIQUAR

SUBMARINE

Name	No.
GAZI (ex-USS <i>Diablo</i> , AGSS, ex-SS 479)	S 130

Builders
Portsmouth Naval Shipyard

Launched
30 Nov 1944

Completed
31 Mar 1945

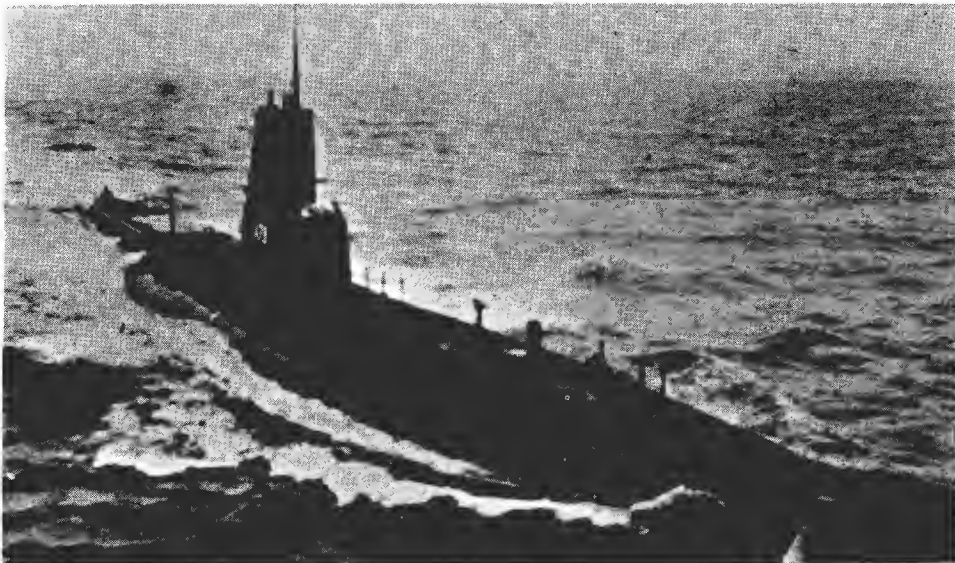
1 "Tench" Class

Displacement, tons	1 570 standard; 1 864 surface 2 410 submerged
Length, feet (metres)	311.7 (95.0) oa
Beam, feet (metres)	27.3 (8.3)
Draught, feet (metres)	16.3 (5.0)
Torpedo tubes	10—21 in (533 mm); 6 bow, 4 stern
Main engines	4 diesels, total 6 500 bhp; 4 electric motors, total 4 610 shp
Speed, knots	20 on surface; 10 submerged
Radius, miles	14 000 at 10 knots
Oil fuel (tons)	300
Complement	89

Transferred on loan from the US Navy after extensive overhaul and refit at the Philadelphia Naval Shipyard, converting her into a Fleet Snorkel Type. Commissioned at the USN Submarine Base, New London, Connecticut on 1 June 1964. The name *Ghazi* means Defender of the Faith.

3 New Construction

It was reported in May 1967 that three submarines of the French "Daphne" class had been ordered, with two to be built by C. N. La Ciotat, Le Trait.



GHAZI

1966, Pakistan Navy, Official

LIGHT CRUISER (Cadet Training Ship)

Name	No.
BABUR (ex-HMS <i>Diadem</i>)	84

Builders and Engineers
R. & W. Hawthorn Leslie & Co Ltd, Hebburn-on-Tyne

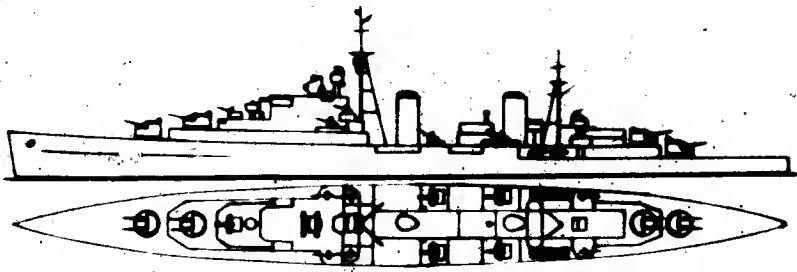
Laid down
15 Nov 1939

Launched
26 Aug 1942

Completed
6 Jan 1944

Displacement, tons	5 900 standard; 7 560 full load
Length, feet (metres)	485 (147.9) pp; 512 (156.1) oa
Beam, feet (metres)	52 (15.8)
Draught, feet (metres)	18.5 (5.6)
Guns, surface	8—5.25 in (133 mm)
Guns, AA	14—40 mm
Torpedo tubes	6—21 in (533 mm) tripled
Armour	3 in (76 mm) sides; 2 in (51 mm) decks and turrets
Boilers	4 Admiralty 3-drum
Main engines	Parsons s.r. geared turbines 62 000 shp; 4 shafts
Speed, knots	32
Oil fuel, tons	1 100
Complement	588

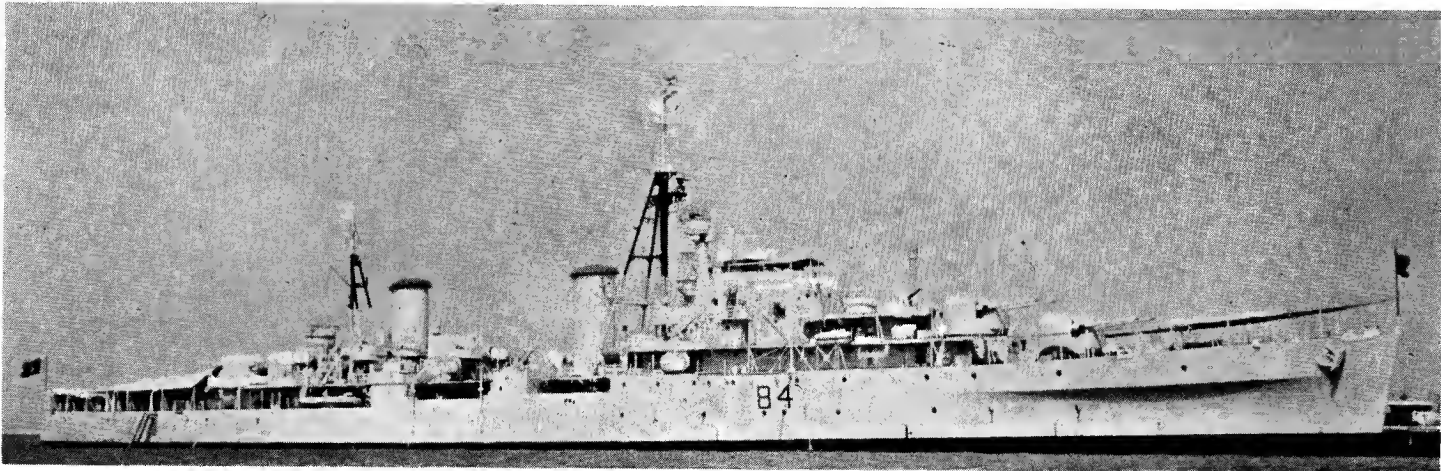
Former British "Dido" class anti-aircraft light cruiser. Sold to Pakistan on 29 Feb 1956 (announced by Admiralty). Refitted at HM Dockyard, Portsmouth in 1957, with new radar and revised secondary armament. Officially turned over to the Pakistan Navy and renamed *Babur* at Portsmouth on 5 July, 1957.



NOMENCLATURE. Renamed after Babur, the founder of the Mogul Empire. (*Diadem* means emblem of sovereignty). Prefix C was dropped from the pennant number in 1963.

CONVERSION. Adapted as cadet training ship in 1961.
DRAWING. Port elevation and plan. Redrawn in 1966. Scale: 128 feet = 1 inch.

Light Cruiser—continued



BABUR

1966, Pakistan Navy, Official

DESTROYERS

Name	No.	Builders	Laid down	Launched	Completed
BADR (ex-HMS Gabbard)	161 (ex-D 47)	Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	2 Feb 1944	16 Mar 1945	10 Dec 1946
KHAIBAR (ex-HMS Cadiz)	163 (ex-D 79)	Fairfield Shipbuilding & Engineering Co Ltd, Govan, Glasgow	10 May 1943	16 Sep 1944	12 Apr 1946

2 "Battle" Class

Displacement, tons	2 325 standard; 3 361 full load
Length, feet (metres)	355 (108·2) pp; 379 (115·5) oa
Beam, feet (metres)	40·2 (12·3)
Draught, feet (metres)	17 (5·2)
Guns, surface	4—4·5 (115 mm)
Guns, AA	10—40 mm
A/S	"Squid" Triple DC mortar
Torpedo tubes	8—21 in (533 mm) quadrupled
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines
	50 000 shp; 2 shafts
Speed, knots	35·75 designed; 31 sea speed
Radius, miles	3 000 at 20 knots
Oil fuel (tons)	680
Complement	270

Sold by Great Britain to Pakistan (announced) on 29 Feb 1956. Modernised with US funds under MDAP. *Badr* was refitted at Palmers Hebburn, Yarrow, handed over to the Pakistan Navy on 24 Jan 1957 and sailed from Portsmouth for Karachi on 17 Feb 1957. *Khaibar* was refitted at Alex Stephen & Son Ltd, Govan, Glasgow, and handed over to the Pakistan Navy on 1 Feb 1957.



BADR

1966, Pakistan Navy, Official

PENNANT NOS. Were changed from D 47 and D 79 to 161 and 163, respectively, in 1963.

NOMENCLATURE. *Khaibar* was named in commemoration of a famous battle in the history of Islam which Prophet Mohammed won in Arabia over 1,350 years ago.



KHAIBAR

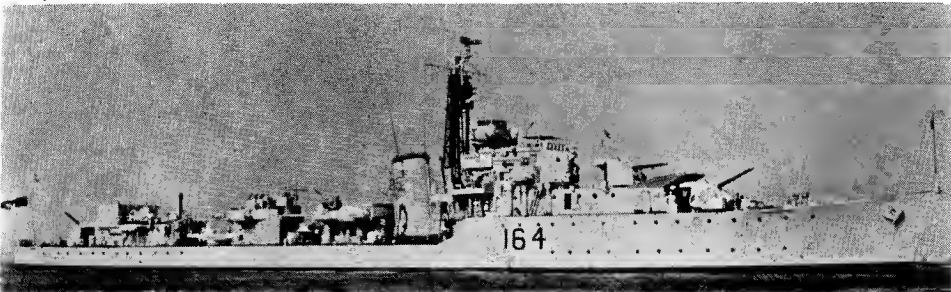
1964, Pakistan Navy, Official

Name	No.	Builders	Laid down	Launched	Completed
SHAH JAHAN (ex-HMS Charity)	164 (ex-D 29)	John I. Thornycroft & Co Ltd, Woolston, Southampton	9 July 1943	30 Nov 1944	19 Nov 1945

1 "Ch" Class

Displacement, tons	1 710 standard; 2 545 full load
Length, feet (metres)	350 (106·7) wl; 362·7 (110·5) oa
Beam, feet (metres)	35·7 (10·9)
Draught, feet (metres)	17 (5·2)
Guns, surface	3—4·5 in (115 mm)
Guns, AA	6—40 mm
A/S	2 "Squid" triple DC mortars
Torpedo tubes	4—21 in (533 mm) quadrupled
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines
	40 000 shp; 2 shafts
Speed, knots	36·75 designed; 31·25 sea speed
Complement	200

Purchased from Great Britain by USA and, under MDAP, handed over to Pakistan on 16 Dec 1958 at J. Samuel White & Co Ltd, Cowes, who refitted her, and renamed *Shah Jahan* ("Emperor of the World") after the Fifth Emperor of the Mughal Dynasty who was ruler at the height of prosperity of the Mughal Empire.



SHAH JAHAN

1963, Pakistan Navy, Official

PENNANT No. changed from D 29 to 164 in 1963.

DISPOSAL. Sister ship *Taimur* (ex-HMS *Chivalrous*) was returned to the Royal Navy and scrapped in 1960-61.

Destroyers—continued

Name	No.	Builders	Laid down	Launched	Completed
ALAMGIR (ex-HMS Creole)	160 (ex-D 82)	J. Samuel White & Co Ltd, Cowes	3 Aug 1944	22 Nov 1945	14 Oct 1946
JAHANGIR (ex-HMS Crispin, ex-Craccher)	162 (ex-D 168)	J. Samuel White & Co Ltd, Cowes	1 Feb 1944	23 June 1945	10 July 1946

2 "Cr" Class

Displacement, tons	1 730 standard; 2 560 full load
Length, feet (metres)	350 (106·7) wl 362·8 (110·5) oa
Beam, feet (metres)	35·7 (10·9)
Draught, feet (metres)	17 (5·2)
Guns, surface	3—4·5 in (115 mm)
Guns, AA	6—40 mm
A/S	2 "Squid" triple DC mortars
Torpedo tubes	4—21 in (533 mm) quadrupled
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines
	40 000 shp; 2 shafts
Speed, knots	36·75 designed; 31·25 sea speed
Radius, miles	2 B00 at 20 knots
Oil fuel (tons)	580.
Complement	200

Sold to Pakistan (announced by the Royal Navy) on 29 Feb 1956. Refitted and modernised in Great Britain by John I. Thornycroft & Co Ltd, Woolston, Southampton, in 1957-58 with US funds under MDAP. Turned over to the Pakistan Navy at Southampton in 1958 (*Crispin* on 18 Mar) and renamed.

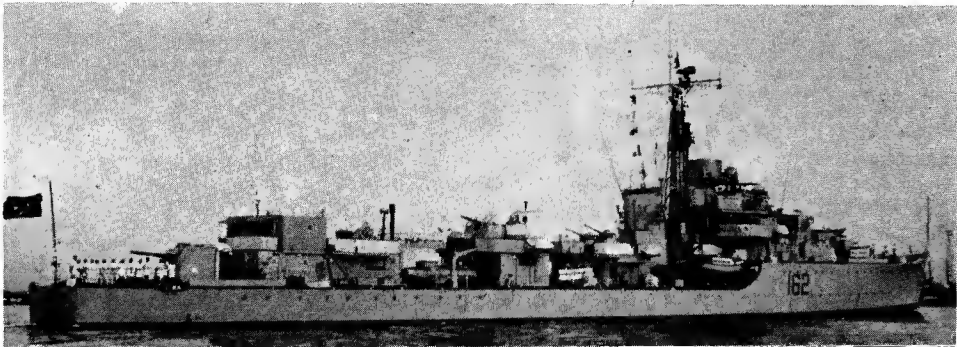
GUNNERY. They formerly had a W/T cabin in place of "B" gun and a gun in "X" position but during the refit before joining the Pakistan Navy the 4·5 inch gun was restored to "B" position, the 4·5 inch gun in "X" position was suppressed and two Squids substituted.

PENNANT NOS. Changed from D B2 and D 168 to 160 and 162, respectively, in 1963.



ALAMGIR

1965, Pakistan Navy, Official



JAHANGIR

1963, Pakistan Navy, Official

FAST ANTI-SUBMARINE FRIGATES (Ex-Destroyers)

Name	No.	Builders	Laid down	Launched	Completed
TIPPU SULTAN (ex-HMS Onslow, ex-Pakenham)	260 (ex-F 249)	John Brown & Co Ltd, Clydebank	1 July 1940	31 Mar 1941	8 Oct 1941
TUGHRIL (ex-HMS Onslaught, ex-Pathfinder)	261 (ex-F 204)	Fairfield SB & Eng Co Ltd, Glasgow	14 Jan 1941	9 Oct 1941	19 June 1942

2 Limited Conversion Type 16

Displacement, tons	1 800 standard; 2 300 full load
Length, feet (metres)	328·7 (100·2) pp; 345 (105·2) oa
Beam, feet (metres)	35 (10·7)
Draught, feet (metres)	15·7 (4·8)
Guns, dual purpose	2—4 in (102 mm)
Guns, AA	5—40 mm
A/S	2 "Squid" triple DC mortars
Torpedo tubes	4—21 in (533 mm)
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines
	40 000 shp; 2 shafts
Speed, knots	34
Complement	170

Originally three "O" class destroyers were acquired from Great Britain, *Tippu Sultan* being handed over on 30 Sep 1949; *Tariq* on 3 Nov 1949; and *Tughril* on 6 Mar 1951. An agreement was signed in London between Great Britain and USA for refit and conversion in the United Kingdom of *Tippu Sultan* and *Tughril* (announced 29 Apr 1957) with US funds. All three ships were scheduled for conversion into fast anti-submarine frigates. *Tippu Sultan* and *Tughril* were converted at Liverpool by



TIPPU SULTAN

1963, Pakistan Navy Official

Grayson Rolls & Clover Docks Ltd, Birkenhead, and C. & H. Crighton Ltd, respectively. *Tariq* was not converted. She was handed back to Great Britain at Portsmouth on 10 July 1959 for disposal. Pennant Nos were changed from D 49 and D 204 to F 249 and F 204 respectively, in 1959, and to 260 and 261 in 1963.

SURVEY SHIP (Ex-Frigate)

Name	No.	Builders	Laid down	Launched	Completed
ZULFIQUAR (ex-Dhanush, ex-Deveron)	262 (ex-F 265)	Smith's Dock Co Ltd, South Bank-on-Tees	16 Apr 1942	12 Oct 1942	2 Mar 1943

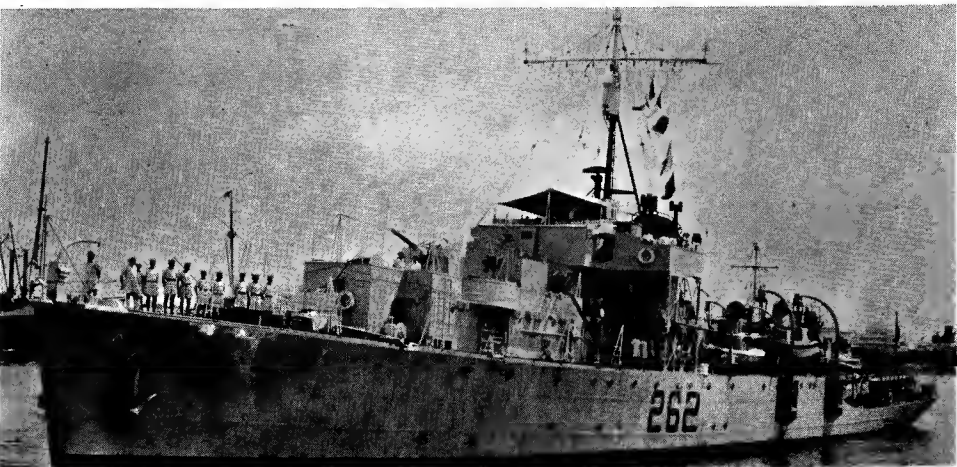
1 "River" Class

Displacement, tons	1 370 standard; 2 100 full load
Length, feet (metres)	283 (86·3) pp; 301·5 (91·9) oa
Beam, feet (metres)	36·7 (11·2)
Draught, feet (metres)	12·5 (3·8)
Guns, surface	1—4 in (102 mm)
Guns, AA	2—40 mm
Boilers	2 Admiralty 3-drum
Main engines	Triple expansion; 5 500 ihp
Speed, knots	20
Radius, miles	3 000 at 12 knots
Oil fuel (tons)	400
Complement	150

Former British "River" class frigate, converted into a survey ship, with additional charthouse aft. She has strengthened davits and carries survey motor boats. The after 4-inch gun was removed.

PENNANT NUMBER was changed from F 265 to 262 in 1963.

DISPOSAL
Sister ship *Shamsher* (ex-*Nadder*) (training ship) of the "River" class was disposed of in 1960.



ZULFIQUAR

1965, Pakistan Navy, Official

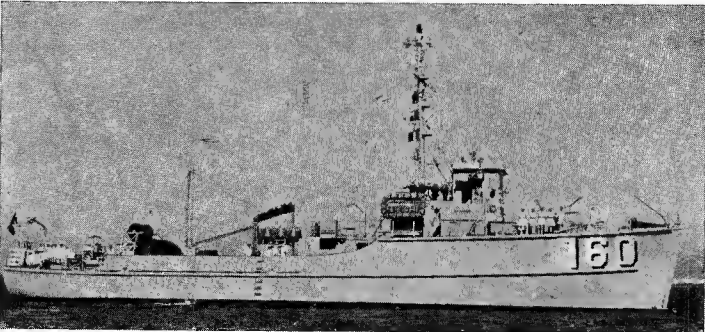
COASTAL MINESWEEPERS

8 MSC Type

MAHMOOD (ex- <i>MSC 267</i>)	MUHAFIZ (ex- <i>AMS 138</i>)
MOMIN (ex- <i>MSC 293</i>)	MUJAHID (ex- <i>MSC 261</i>)
MOSHAL (ex- <i>MSC 294</i>)	MUKHTAR (ex- <i>MSC 274</i>)
MUBARAK (ex- <i>MSC 262</i>)	MUNSIF (ex- <i>MSC 273</i>)

Displacement, tons	335 light; 375 full load
Dimensions, feet	138 pp; 144 oa × 27 × 8.5
Guns	2—20 mm
Main engines	2 GM diesels; 2 shafts; 880 bhp = 14 knots
Complement	39

Transferred to Pakistan by the US under MAP. *Mukhtar* and *Munsif* on 25 June 1959, *Muhafiz* on 25 Feb 1955, *Mujahid* in Nov 1956, *Mahmood*, M 160, in May 1957, *Mubarak* in 1957, *Momin* in Aug 1962 and *Moshal* M 167, on 13 July 1963. A photograph of *Momin* appears in the 1964-65 edition.



MAHMOOD 1963, Pakistan Navy, Official

PATROL CRAFT

4 "Town" Class

COMILLA P 142	JESSORE P 141	RAJSHAHI P 140	SYLHET P 143
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Displacement, tons	115 standard; 143 full load
Dimensions, feet	100 wl; 107 oa × 20 × 5
Guns	2—40 mm; 70 cal Bofors AA
Main engines	2 Maybach/Mercedes MD 655/18 diesels; 3 400 bhp (tropical) = 24 knots
Complement	19

These fast patrol craft, named after towns in East Pakistan, were built by Brooke Marine Limited, Lowestoft, England, to the order of the Pakistan Government. The contract was placed on 5th Oct 1963, *Jessore* and *Comilla* were commissioned on 20th May, 1965 and *Rajshahi* and *Sylhet* on 2 Aug 1965. The hulls are of special design longitudinally and transversely strengthened. All-welded steel construction with superstructures of all welded sea resistant aluminium alloy.



JESSORE 1965, Pakistan Navy, Official

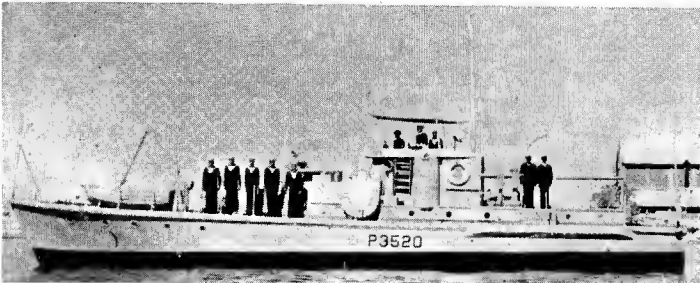
SEAWARD DEFENCE MOTOR LAUNCHES

2 SDML Type

SDML 3517 (ex- <i>SDML 1261</i>)	SDML 3540 (ex- <i>SDML 1266</i>)
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Displacement, tons	46 standard; 54 full load
Dimensions, feet	72 oa × 15.8 × 15.3
Guns	1—3 pdr; 1—20 mm AA
Main engines	Diesels; 2 shafts; 320 bhp = 12 knots
Complement	14

Former British Harbour Defence Motor Launches of wooden construction, built under the emergency programme during the Second World War, and re-designated Seaward Defence Motor Launches after the war. SDML 3518 and SDML 3519 were scrapped in 1965. A photograph of SDML 3517 appears in the 1963-64 and 1964-65 editions.



SDML 3520 1965, Pakistan Navy, Official

OILERS

DACCA (ex-USNS *Mission Santa Clara*, AO 132) A 41

Displacement, tons	5 730 light; 22 380 full load
Dimensions, feet	503 wl; 523.5 oa × 68 × 30.9 max
Main engines	Turbo-electric; 6 000 shp = 15 knots
Boilers	2 Babcock & Wilcox
Oil capacity	20,000 tons (official figure); 134,000 barrel capacity
Complement	160 (15 officers and 145 men)

Former US fleet tanker of the "T2-SE-A1" Type ("Mission" Class). Transferred on loan to Pakistan under MDAP. Handed over from the US on 17 Jan 1963.

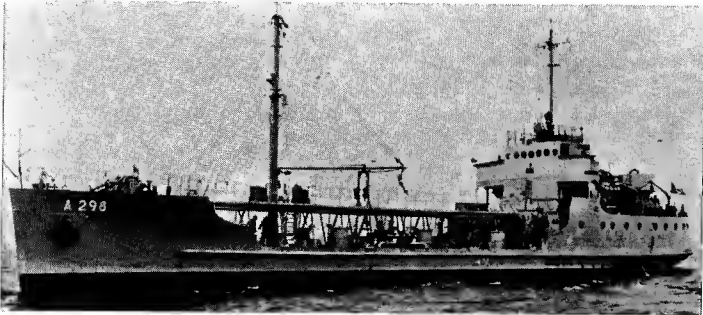


DACCA 1964, Pakistan Navy, Official

ATTOCK

Displacement, tons	600 standard; 1,255 full load
Dimensions, feet	177.2 oa × 32 × 15 max
Main engines	Direct coupled diesel; speed 8.5 knots
Complement	26

A harbour oiler of 6,500 barrels capacity built in Trieste, Italy, in 1960 for the Pakistan Navy, under the Mutual Defence Assistance Programme of USA.



ATTOCK 1963, Giorgio Arra

WATER CARRIERS

ZUM ZUM YW 15

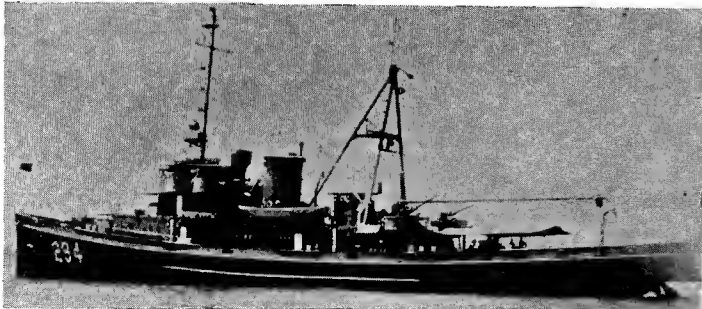
Built in Italy under US off-shore procurement of the MDA Programme.

TUGS

MADADGAR (ex-USS *Yuma*, ATF 94)

Displacement, tons	1 235 standard; 1 675 full load
Dimensions, feet	195 wl; 205 oa × 38.5 × 15.3 max
Main engines	4 GM diesels; electric drive; 1 shaft; 3 000 bhp = 16.5 knots
Complement	85

Ocean-going salvage tug. Built by Commercial Iron Works, Portland, Oregon. Laid down on 13 Feb 1943. Launched on 17 July 1943. Completed on 31 Aug 1943. Transferred from the US Navy to the Pakistan Navy on 25 Mar 1959 under MDAP. Fitted with powerful pumps and other salvage equipment.



MADADGAR 1965, Pakistan Navy, Official

RUSTOM

Dimensions, feet	105 × 30 × 11
Main engines	Crossley diesel; 1 000 bhp = 9.5 knots (max)
Radius, miles	1 500 endurance
Complement	21

General purpose tug for the Pakistan Navy originally ordered from Werf-Zeeland at Hansweert, Netherlands, in Aug 1952, but after the liquidation of this yard the order was transferred to Worst & Dutmer at Meppel. Launched on 29 Nov 1955. A photograph appears in the 1964-65 edition.

BHOLU

GAMA

These are small harbour tugs built under an "off-shore" order by Costaguta-Voltz.

PERU

Administration

Minister of Marine:
Rear Admiral Luis Ponce A.

Chief of Naval Operations:
Vice-Admiral Fernando Lino Zamudio

Chief of Naval Staff:
Rear Admiral Jose Rivarola R.

Commander-in-Chief of the Fleet:
Rear Admiral Alfonso Navarro R.

Strength of the Fleet

- 4 Submarines (Diesel Powered)
- 2 Cruisers
- 2 Destroyers
- 3 Destroyer Escorts
- 2 Patrol Vessels (Corvettes)
- 6 Coastal Patrol Boats
- 2 Coastal Minesweepers
- 4 Landing Ships (2 Medium)
- 7 River Gunboats
- 3 Patrol Launches
- 16 Support Ships and Service Craft

Diplomatic Representation

Naval Attaché in London:
Rear Admiral Enrique Carbonel C.

Naval Attaché in Washington:
Rear Admiral Luis Rivero Romainville

Personnel

1967: 7,150 (650 officers, 6,500 men)

Mercantile Marine

Lloyd's Register of Shipping:
119 vessels of 168,769 tons gross

SUBMARINES

4 "Abtao" Class (U.S. Built)

Displacement, tons 825 standard; 1 400 submerged

Length, feet (metres) 243 (74.1) oa

Beam, feet (metres) 22 (6.7)

Draught, feet (metres) 14 (4.3)

Guns, surface 1—5 in (127 mm) 25 cal (Abtao and 2 de Mayo)

Torpedo tubes 6—21 in (533 mm); 4 bow, 2 stern

Main engines 2 GM 278A diesels; 2 400 bhp; Electric motors; 2 shafts

Speed, knots 16 on surface; 10 submerged

Radius, miles 5 000 at 10 knots

Oil fuel (tons) 45

Complement 40

All built by Electric Boat Division, General Dynamics Corporation, Groton, Connecticut. They are of modified US "Mackerel" class.

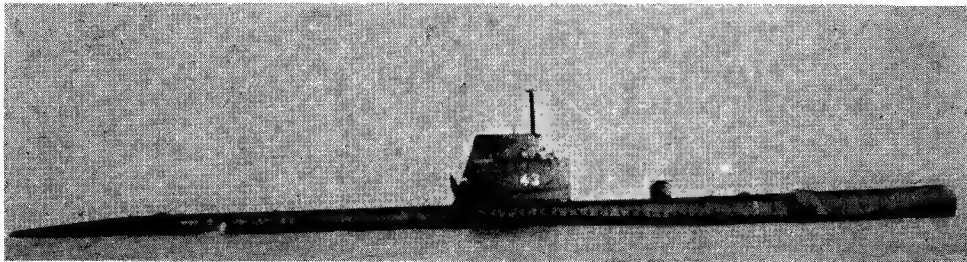
NOMENCLATURE. The names of all Peruvian submarines were changed in Apr 1957 by a supreme decree of the President of the Republic of Peru. The names now used are in honour of famous Peruvian naval battles. Previous names: Lobo means wolf, Tiburon shark.

PENNANT NUMBERS were changed from 5, 7, 6 and 8 to SS 2, SS 3, SS 1 and SS 4 respectively in 1959, and were again changed to 42, 43, 41 and 44 respectively in 1960.

PHOTOGRAPHS. A photograph of all four submarines of this class together appears in the 1959-60 edition, of 2 de Mayo in the 1960-61 to 1965-66 editions and of Iquique in the 1964-65 and 1965-66 editions.

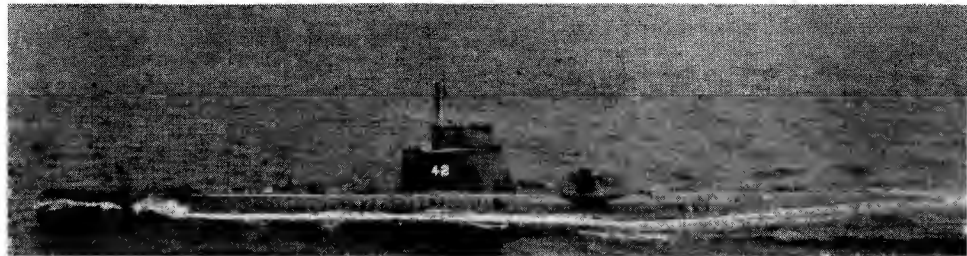
DISPOSALS. The four old submarines of the "R" class, Arica (ex-R 4), Casma, (ex-R 2), Islay (ex-R 1) and Pacocha (ex-R 3) were scrapped in 1960.

Name	No.	Laid down	Launched	Completed
ABTAO (ex-Tiburon)	42	12 May 1952	27 Oct 1953	20 Feb 1954
ANGAMOS (ex-Atun)	43	27 Oct 1955	5 Feb 1957	1 July 1957
DOS DE MAYO (ex-Lobo)	41	12 May 1952	6 Feb 1954	14 June 1954
IQUIQUE (ex-Merlin)	44	27 Oct 1955	5 Feb 1957	1 Oct 1957



ANGAMOS

1966, Peruvian Navy, Official



ABTAO

1966, Peruvian Navy, Official

CRUISERS

Name	No.
ALMIRANTE GRAU (ex-HMS Newfoundland)	81
CORONEL BOLOGNESI (ex-HMS Ceylon)	82

2 "Almirante Grau" Class

Displacement, tons Almirante Grau: 8 800 standard; 11 090 full load
Col. Bolognesi: 8 781 standard; 11 110 full load

Length, feet (metres) 538 (164.0) wl; 549 (167.4) wl; 555.5 (169.3) oa

Beam, feet (metres) 63.6 (19.4)

Draught, feet (metres) 16.5 (5.0) mean; 20.5 (6.2) max

Guns, surface 9—6 in (152 mm)

Guns, AA 12—40 mm Almirante Grau
18—40 mm Col. Bolognesi

Armour 4 in (102 mm) sides and CT;
2 in (51 mm) turrets and deck

Boilers 4 Admiralty 3-drum; 400 psi (28 km/cm²); 720°F (382°C)

Main engines Parsons s.r. geared turbines
72 500 shp; 4 shafts

Speed, knots 31.5

Radius, miles 6 000 at 13 knots; 2 800 at full power

Oil fuel (tons) 1 620

Complement Almirante Grau: 743
Col Bolognesi: 766

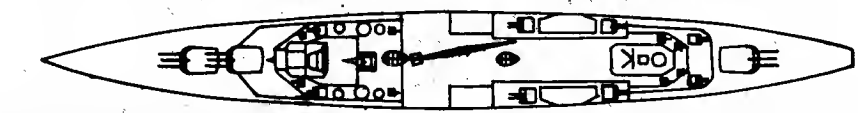
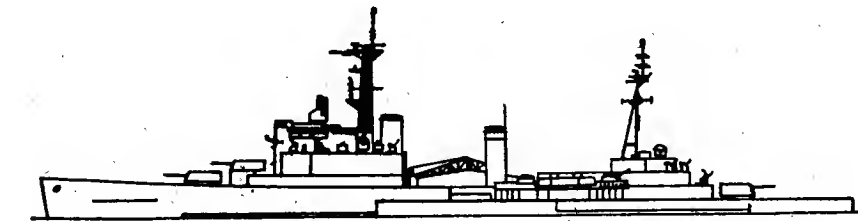
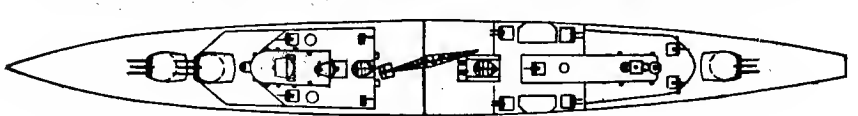
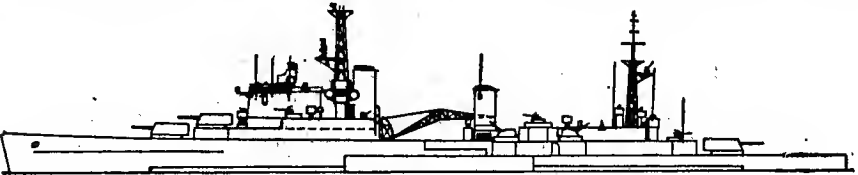
Former British cruisers of the "Ceylon" class, a modification of the original 8 000-ton "Colony" class design, one 6-inch turret having been suppressed, and the number of light AA. guns augmented Almirante Grau was engined by Wallsend Slipway & Engineering Co Ltd.

RECONSTRUCTION. Almirante Grau was reconstructed in 1951-53 at HM Dockyard, Devonport, with two lattice masts, new bridge and improved AA armament, her torpedo tubes being removed. Coronel Bolognesi was refitted with lattice foremast and covered modified bridge in 1955-56, and her torpedo tubes were removed.

GUNNERY. The 4 inch guns of Coronel Bolognesi are radar-controlled.

TORPEDO TUBES. Each ship originally mounted 6—21 inch torpedo tubes.

Builders	Laid down	Launched	Completed
Swan, Hunter & Wigham Richardson, Ltd, Wallsend on-tyne	9 Nov 1939	19 Dec 1941	13 July 1943
Alexander Stephen & Sons, Ltd, Govan, Glasgow	27 Apr 1939	30 July 1942	31 Dec 1942



APPEARANCE. Almirante Grau has HA director mounted on either side of bridge. Coronel Bolognesi was refitted with a lattice foremast and a tripod mainmast, whereas Almirante Grau was reconstructed with two lattice masts.

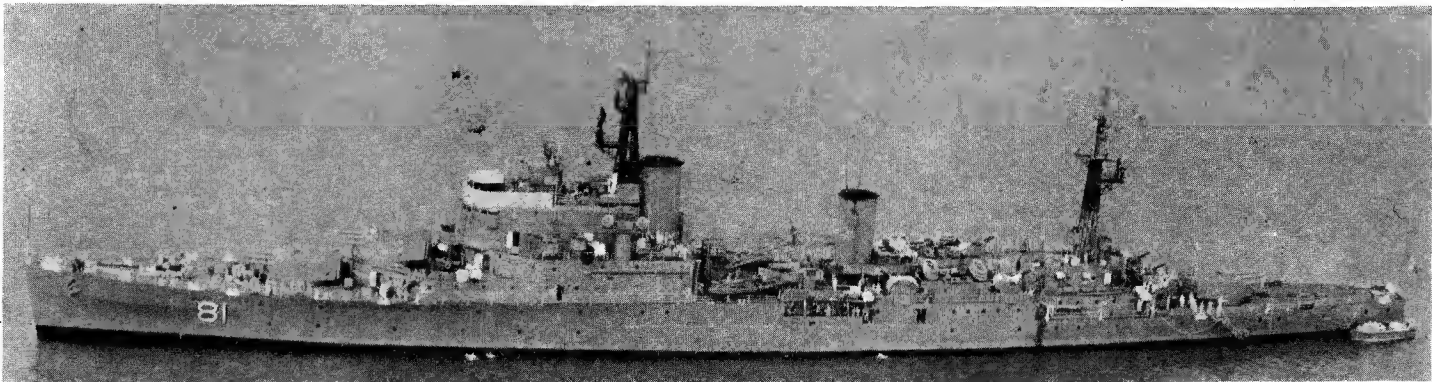
TRANSFER. Almirante Grau (incorporated in the Peruvian Navy on 19 Dec 1959) was formally transferred from the British Navy at Portsmouth on 30 Dec 1959 and

Coronel Bolognesi was transferred from the British Navy at Portsmouth on 9 Feb 1960.

UPPER DRAWING. Port elevation and plan of Almirante Grau. Scale 128 feet = 1 inch.

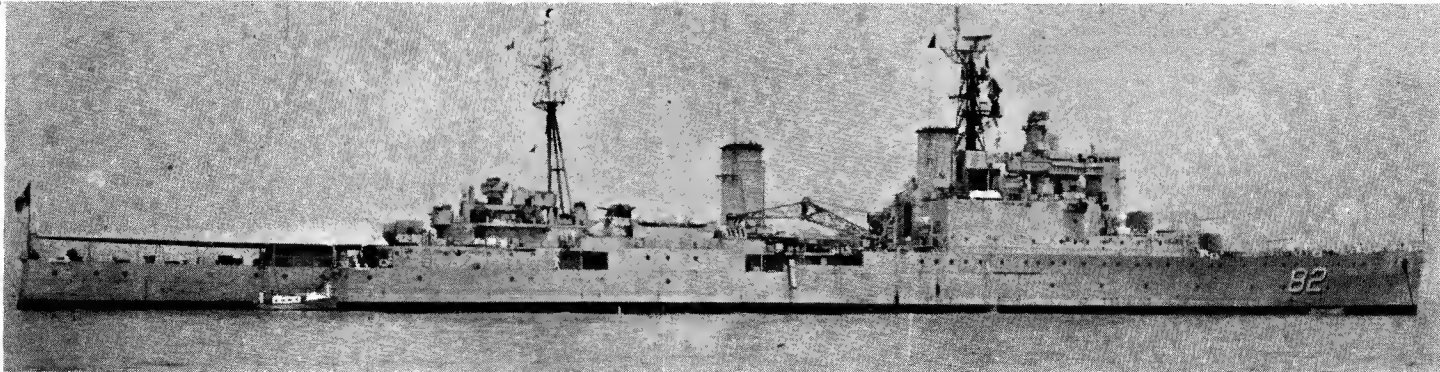
LOWER DRAWING. Port elevation and plan of Coronel Bolognesi. Scale: 128 feet = 1 inch.

Cruisers—continued



ALMIRANTE GRAU

1967, Peruvian Navy, Official



CORONEL BOLOGNESI

1966, Peruvian Navy, Official

DESTROYERS

Name	No.	Builders	Launched	Completed
GUISE (ex-USS Isherwood, DD 520)	72	Bethlehem Steel Co, Staten Island	24 Nov 1942	10 Apr 1943
VILLAR (ex-USS Benham, DD 796)	71	Bethlehem Steel Co, Staten Island	29 Aug 1943	20 Dec 1943

2 "Villar" Class
Ex-U.S. "Fletcher" Class

Displacement, tons	2 120 standard; 2 715 normal; 3 050 full load
Length, feet (metres)	360·2 (109·8) pp; 370 (112·8) wl; 376·2 (114·7) oa
Beam, feet (metres)	39·7 (12·1)
Draught, feet (metres)	12·2 (3·7) mean; 18 (5·5) max
Guns, dual purpose	4—5 in (127 mm) 38 cal.
Guns, AA	6—3 in (76 mm) 50 cal., 3 twin
A/S weapons	2 fixed Hedgehogs; 1 DC rack
Torpedo tubes	5—21 in (533 mm) quintupled
Torpedo racks	2 side-launching for A/S torpedoes
Boilers	4 Babcock & Wilcox; 600 psi (42 km/cm ²); 850°F (455°C)
Main engines	2 GE impulse reaction geared turbines; 60 000 shp; 2 shafts
Speed, knots	34 max; 15 economical sea
Radius, miles	6 000 at 15 knots; 900 at full power
Oil fuel (tons)	650
Complement	Allowance; 245 (15 officers and 230 men) Max accommodation: 275 (15 officers and 260 men) revised official figures



GUISE

1964, Peruvian Navy, Official



VILLAR

1967, Peruvian Navy, Official

Former United States destroyers of the later "Fletcher" class (Villar) and "Fletcher" class (Guise).

TRANSFER. Transferred from the United States Navy to the Peruvian Navy at Boston, Massachusetts, on 15 Dec 1960, and at San Diego, California, on 8 Oct 1961 respectively.

ACQUISITION PROGRAMME

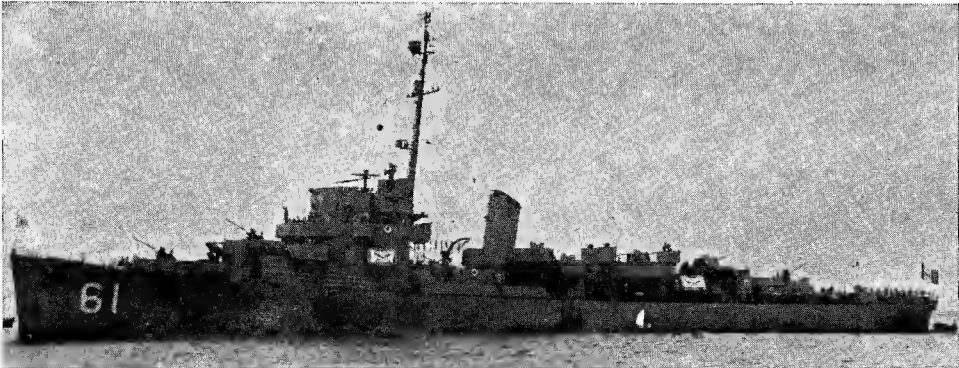
Two more destroyers of the "Fletcher" type were to have been transferred from the USA, but this is not now in prospect, it was officially stated in 1967.

DESTROYER ESCORTS

3 "Castilla" Class
Ex-U.S. "Bostwick" Class

Displacement, tons	1 240 standard; 1 900 full load
Length, feet (metres)	300 (91.4) pp; 302.2 (92.1) wl; 306 (93.3) oa
Beam, feet (metres)	36.9 (11.2)
Draught, feet (metres)	12 (3.6) mean; 14.1 (4.3) max
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	6—40 mm, 3 twin; 10—20 mm
A/S weapons	1 Mk 10 ahead-throwing mortar; B K mortars; 2 DC racks aft
Torpedo tubes	Removed
Main engines	4 GM diesel-electric sets 60 000 hp; 2 shafts
Speed, knots	21 designed; 19 max continuous
Radius, miles	10 500 at 12 knots; 3 000 at full power
Oil fuel (tons)	322
Complement	Allowance: 172 (12 officers and 160 men); Max accommodation: 212 (12 officers and 200 men) revised official figures

Name	No.	Launched	Completed
AGUIRRE (ex-USS <i>Waterman</i> , DE 740)	62	4 July 1943	31 Dec 1943
CASTILLA (ex-USS <i>Bangust</i> , DE 739)	61	6 June 1943	30 Oct 1943
RODRIGUEZ (ex-USS <i>Weever</i> , DE 741)	63	20 June 1943	30 Nov 1943



CASTILLA

1964, Peruvian Navy, Official

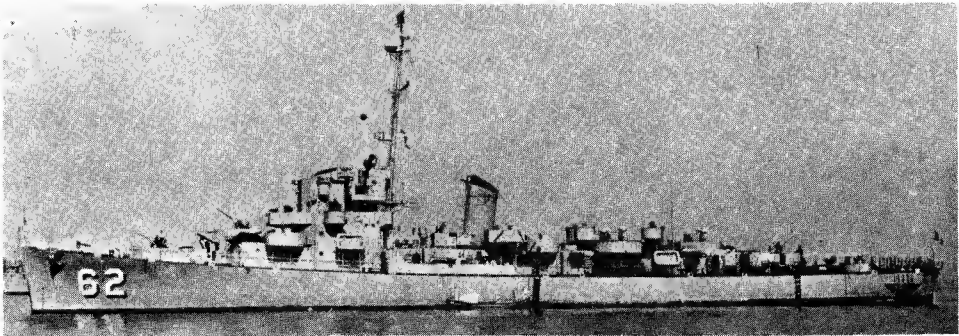
Former United States destroyer escorts DE, of the "Bostwick" class. All built by the Western Pipe & Steel Co, San Pedro, California, in 1943. Transferred to Peru on 26 Oct 1951, under the Mutual Defense Assistance Program. Reconditioned and modernised at Green Cove Springs and Jacksonville, Flor. Actually arrived in Peru on 24 May 1952.

PENNANT NUMBERS. Given "DE" instead of "D" pennant numbers in 1959. Pennant numbers were changed from 2, 1 and 3 to 62, 61 and 63 respectively, in 1960.

TORPEDO TUBES. The original three 21 inch torpedo tubes in a triple mounting were removed.

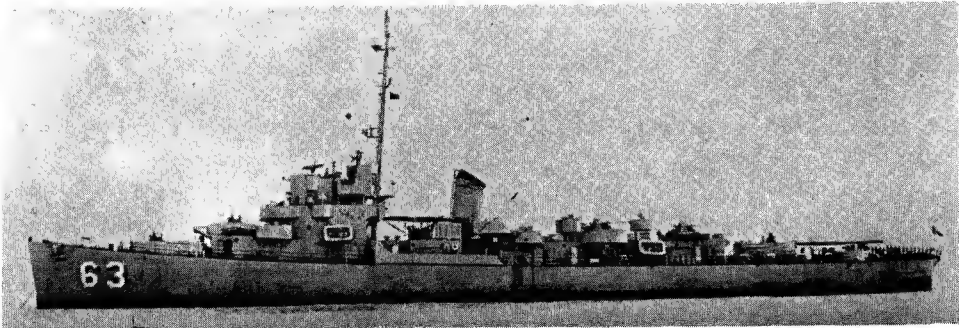
PHOTOGRAPHS. A starboard quarter oblique aerial view of *Castilla* appears in the 1953-54 to 1959-60 editions, a port broadside surface view of *Rodriguez* in the 1960-61 to 1963-64 editions, a port bow surface view of *Aguirre* in the 1960-61 to 1965-66 editions, a starboard bow oblique aerial view of *Rodriguez* in the 1966-67 edition.

DISPOSALS
The two frigates of the "Palacios" Class, *Ferré* (ex-HMCS *Poundmaker*) and *Palacios* (ex-HMCS *St. Pierre*), former frigates of the Canadian "River" class, were officially stricken from the Navy List in 1966. The frigate *Galvez* (ex-USS *Woonsocket*, PF 32), former patrol frigate of the United States "Tacoma" class, was scrapped in 1961.



AGUIRRE

1967, Peruvian Navy, Official



RODRIGUEZ

1967, Peruvian Navy, Official

PATROL VESSELS (Corvettes)

Name	No.	Laid down	Launched	Completed
DIEZ CANSECO (ex-USS <i>Shoveler</i> , MSF 382)	69	1 Apr 1944	10 Dec 1944	28 June 1945
GALVEZ (ex-USS <i>Ruddy</i> , MSF 380)	68	24 Feb 1944	29 Oct 1944	28 Apr 1945

2 "Galvez" Class. Ex-U.S. MSF Type

Displacement, tons	890 standard; 1 250 full load
Dimensions, feet	215 wl; 221.2 oa x 32.2 x 11 max
Guns	1—3 in, 50 cal dp; 2—40 mm AA
A/S weapons	1 hedgehog
Main engines	Diesel electric; 2 shafts; 3 532 bhp = 18 knots
Complement	100

Former US "Auk" class fleet minesweepers, MSF (ex-ocean minesweepers, AM), of the large steel hulled type. Both built by Gulf Shipbuilding Corp. Activated at San Diego, California, and transferred to the Peruvian Navy under the Mutual Defense Assistance Program on 1 Nov 1960. Minesweeping gear was removed and sonar equipment fitted so that they could be used as patrol vessels. The 3 inch gun director was also removed. A photograph of *Diez Canseco* appears in the 1961-62 to 1964-65 editions.



GALVEZ

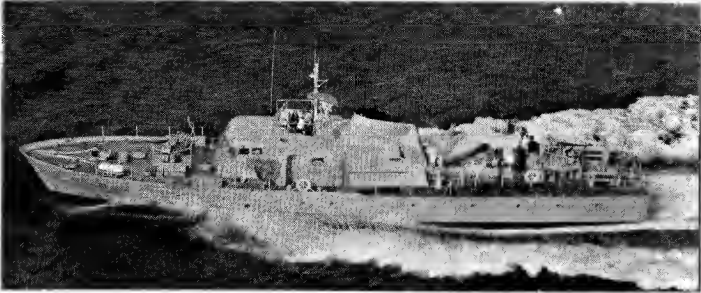
1967, Peruvian Navy, Official

FAST PATROL CRAFT

6 Vosper Type

DE LOS HEROS	23	LARREA	25	SANTILLANA	22
HERRERA	24	SANCHEZ CARRION	26	VELARDE	21
Displacement, tons 100					
Dimensions, feet 103.7 wl; 109.7 oa x 21 x 5.7					
Guns 2—20 mm AA					
Main engines 2 Napier Deltic 18 cyl, turbocharged diesels;					
6 200 bhp = 30 knots					
Complement 25 (4 officers and 21 ratings)					

Ordered in 1963. Designed and built by Vosper Ltd, Portsmouth, England, for the Peruvian Navy. Of all-welded steel construction with aluminium upperworks. Designed for coastal patrol, air sea-rescue, and fishery protection. Equipped with Vosper roll damping fins, Decca Type 707 true motion radar, comprehensive radio, up-to-date navigation aids, and air-conditioning. The first boat, *Velarde*, was launched on 10 July 1964, the last, *Sanchez Carrion*, on 18 Feb 1965. Can be armed as gunboat, torpedo boat (provision was made to ship four side-launched torpedoes) or minelayer. As an alternative to the gun armament a twin rocket projector can be fitted forward. Fitted with sonar equipment and depth charges in racks aft.



VELARDE 1966, Vosper Ltd, Portsmouth, England, Builders

COASTAL MINESWEEPERS

2 "Bondy" Class

BONDY (ex-YMS 25) 137	SAN MARTIN (ex-YMS 35) 138
Displacement, tons 300 standard; 325 full load	
Dimensions, feet 136 x 24.5 x 6	
Guns 1—3 in; 2—20 mm AA	
Main engines 2 GM diesels; 1 000 bhp = 13 knots; 11 knots econ)	
Complement 30	

Former US motor minesweepers of the YMS type. Of wooden construction, *Bondy* was built by Greenport Basin & Construction Co, Long Island, NY, and launched on 28 Jan 1943, *San Martin* was built by C. Hiltbrandt Drydock Co, Kingston, NY, and acquired from the USA in 1947. Formerly known as *Alferez de Fragata Bondy* and *Guardamarina San Martin*. Pennant Nos. were changed from 27 and 29 to 137 and 06 respectively, in 1964 and the latter to 13B in 1965. A photograph of *San Martin* appears in the 1958-59 to 1965-66 editions.



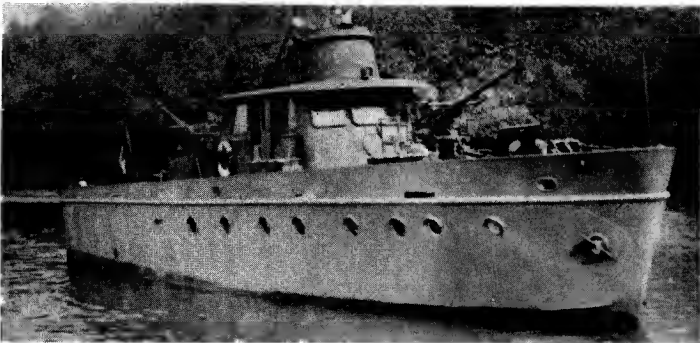
BONDY 1966, Peruvian Navy, Official

PATROL LAUNCHES

3 "Rio" Class

RIO PIURA 04	RIO TUMBES 02	RIO ZARUMILLA 01
Displacement, tons 37 full load		
Dimensions, feet 65.7 x 17 x 3.2		
Guns 2—40 mm		
Main engines 2 GM diesels; 2 shafts; 1 200 bhp = 18 knots		

Built by Viareggio, Italy. Ordered in 1959, laid down on 15 July 1959, and entered service on 5 Sep 1960. *Rio el Salto*, 03, was deleted from the list in 1966. There are also the ex-US small patrol craft *YP 99*, *YP 242* and *YP 243*.



RIO PIURA 1967, Peruvian Navy, Official

GUNBOATS

PGM 78

PGM 111

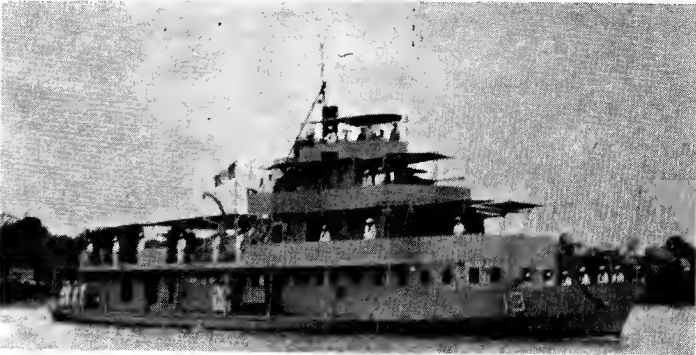
The above are US numbers. *PGM 111* is building in USA for transfer under MAP, and *PGM 78* built by Petersen Builders has been transferred to Peru.

RIVER GUNBOATS

2 "Marañon" Class

MARAÑÓN 13	John I. Thornycroft & Co	23 Apr 1951	July 1951
UCAYALI 14	Ltd, Southampton, England	7 Mar 1951	June 1951
Displacement, tons 365 full load			
Dimensions, feet 154.8 wl x 32 x 4 max			
Guns 2—3 in, 50 cal dp; 7—20 mm AA (2 twin, 3 single)			
Main engines British Polar M 441 diesels; 800 bhp = 12 knots			
Range, miles 6 000 without refuelling			
Complement 40			

Ordered early in 1950. Employed on police duties in Upper Amazon. Specially designed for carrying naval officers and men under tropical conditions. Very shallow draught. Superstructure of aluminium alloy. Mechanical ventilation. Based on Iquitos.

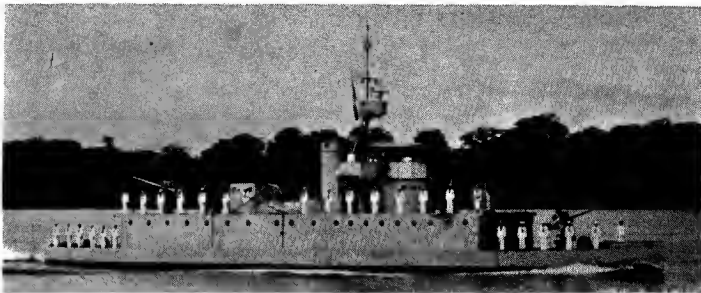


MARAÑÓN 1962, Peruvian Navy, Official

2 "Loreto" Class

AMAZONAS 11	LORETO 12
Displacement, tons 250 standard	
Dimensions, feet 145 x 22 x 4	
Guns 2—3 in; 1—45 mm; 2—20 mm AA	
Main engines Diesel; 750 bhp = 15 knots	
Complement 35	

Designed and built by the Electric Boat Co, Groton, Conn. Launched in 1934. A photograph of *Loreto* appears in the 1958-59 edition.



AMAZONAS Peruvian Navy, Official

NAPO 301

Displacement, tons 98	
Dimensions, feet 100 pp, 101.5 oa x 18 x 3	
Guns 3—47 mm (3 pdr); 2 MG AA	
Main engines Triple expansion; 250 ihp = 12 knots	
Boilers Yarrow	
Complement 22	

Built by Yarrow Co Ltd, Scotstoun, Glasgow. Launched in 1920. Of steel construction. Converted from wood to oil fuel burning. In the Upper Amazon Flotilla. Pennant No. 16 was changed to 301 in 1967.

AMERICA 15

Displacement, tons 240	
Dimensions, feet 133 x 19.5 x 4.5	
Guns 2—3 pdr; 4—12.7 mm AA	
Main engines Triple expansion; 350 ihp = 14 knots	
Complement 26	

Built by Tranmere Bay Development Co Ltd, Birkenhead. Launched and completed in 1904. Of steel construction. Converted from coal to oil fuel burning. In the Upper Amazon Flotilla.

IQUITOS 128

Displacement, tons 50	
Dimensions, feet 77 x 12 x 7.5	
Guns 2—37 mm; 2—20 mm; 2 MG AA	
Main engines Triple expansion; speed = 7 knots	

Built in France. Launched in 1875. Rebuilt in 1896. Refitted in 1936. Converted merchant vessel. Pennant No. 18 was changed to 128 in 1967.

LANDING SHIPS

CHIMBOTE (ex-M/S *Rawhiti*, ex-USS *LST* 283) 34

Displacement, tons 1 625 standard; 4 050 full load
Dimensions, feet 316 wl; 32B oa x 50 x 14.1
Guns 1—3 in
Main engines GM diesels; 2 shafts; 1 700 bhp = 10 knots
Oil fuel, tons 600 oil tanks; 1 100 ballast tanks
Radius, miles 24 000 at 9 knots
Complement Accommodation for 16 officers and 130 men

Former US tank landing ship of the 1-510 Series. Built by American Bridge Co, Ambridge, Pennsylvania. Laid down on 2 Aug 1943, launched on 10 Oct 1943 and completed on 1B Nov 1943. Sold to Peru by a British firm in 1951.

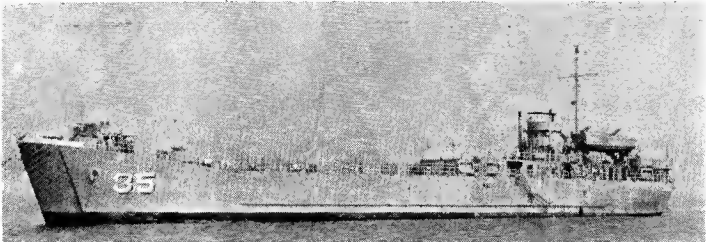


CHIMBOTE 1965, Peruvian Navy, Official

PAITA (ex-USS *Burnett County*, *LST* 512) 35 (ex-AT 4)

Displacement, tons 1 653 standard; 4 080 full load
Dimensions, feet 316 wl; 32B oa x 50 x 14.5 max
Guns 6—40 mm AA; 6—20 mm AA
Main engines GM diesels; 2 shafts; 1 700 bhp = 10 knots
Complement 13 officers, 106 men

Former US tank landing ship of the 511-1152 Series. Built by Chicago Bridge & Iron Co, Seneca, Illinois. Laid down on 29 July 1943. Launched on 10 Dec 1943 and completed on 8 Jan 1944. Purchased by Peru in 1957.



PAITA 1966, Peruvian Navy, Official

2 "Lomas" Class

ATICO (ex-USS *LSM* 554) LOMAS (ex-USS *LSM* 396)

Displacement, tons 513 standard; 913 full load
Dimensions, feet 196.5 wl; 203.5 oa x 34.5 x 7
Guns 2—40 mm AA; 4—20 mm AA
Main engines Diesels; 800 rpm; 2 shafts; 3 600 bhp = 12 knots
Oil fuel, tons 165 oil tanks
Complement Accommodation for 116 (10 officers and 106 men)

Former US medium landing ships of the LSM type. Both built by Charleston Navy Yard, Charleston, SC, USA. Purchased in 1959. A photograph of *Atico* appears in the 1960-61 to 1966-67 editions.

Name	No.	Laid down	Launched	Completed
<i>Atico</i>	37	3 Mar 1945	22 Mar 1945	14 Sep 1945
<i>Lomas</i>	36	13 Dec 1944	2 Jan 1945	23 Mar 1945



LOMAS 1967, Peruvian Navy, Official

FLDATING DDCKS

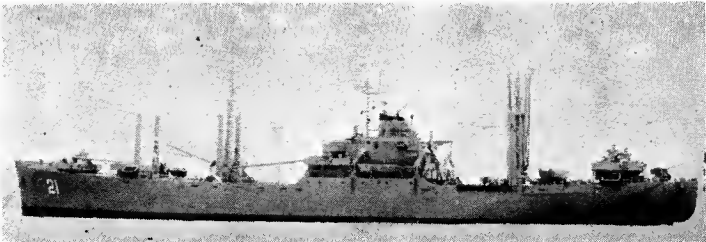
The former United States auxiliary floating dry dock *ARD B* was transferred to Peru in Feb 1961: displacement 5 200 tons; length 492 feet; beam 84 feet; draught 5.7 to 33.2 feet. Pennant No. changed from WY 20 to ADF 112 in 1964. The former United States floating dock *AFDL* 3, launched in Oct 1964, was transferred to Peru in July 1959: displacement 1 900 tons; length 288 feet; beam 64 feet; draught 8.2 to 31.5 feet. Pennant No. changed from WY 19 to ADF 111 in 1964.

TRANSPORTS

INDEPENDENCIA (ex-USS *Bellatrix*, AKA 3, ex-Raven, AKA 20) 21

Displacement, tons 6 194 light; 14 225 full load
Measurement, tons Maritime Commission deadweight, 8 656
Dimensions, feet 435 wl; 459 oa x 63 x 26.5
Main Engines 1 Nordberg diesel; 1 shaft; 6 000 bhp = 16.5 knots

Former US attack cargo ship. Built by Tampa Shipbuilding Co, Tampa, Florida, in 1941. Transferred to Peru at Bremerton, Washington on 20 July 1963 under the Military Aid Program. Training ship for the Peruvian Naval Academy.

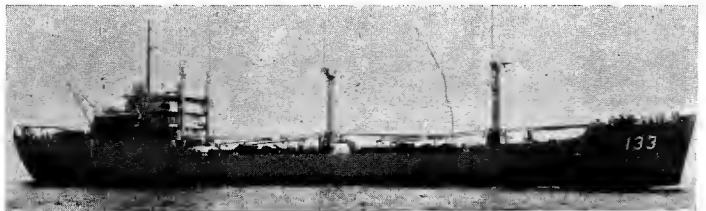


INDEPENDENCIA 1966, Peruvian Navy, Official

ILO (ex-Norlindo) 133

Displacement, tons B 385 full load
Dimensions, feet 388.5 x 50.2 x 9
Main engines Diesels; 1 shaft; 1 700 bhp = 10.5 knots

Built at Sturgeon Bay, Wis, USA, by Leatham D. Smith Shipbuilding Co, in 1945. Acquired by the Peruvian Navy from Benham and Boyesen Inc, Norway in 1959. Pennant No. changed from 33 to 133 in 1964.

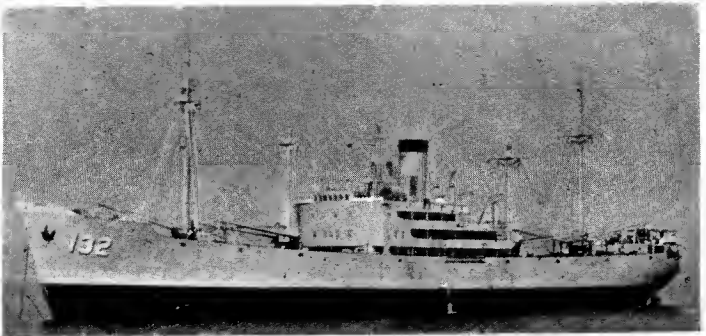


ILO 1962, Peruvian Navy, Official

CALLAO (ex-Monserrate) 132

Displacement, tons 7 790 full load
Measurement, tons 5 578 gross
Dimensions, feet 459 x 56 x 22
Main engines 2 diesel motors; speed = 14 knots
Complement 100 (13 officers, 87 ratings)

Former Hamburg America liner. Built by Bremen Vulkan Yard, Bremen-Vegesack. Launched in 1938. Salvaged and seized on 1 Apr 1941 by the Peruvian Government, after scuttling by the Germans. Employed as a troop transport and cargo carrier. Pennant No. changed from 32 to 132 in 1964.



CALLAO 1965, Peruvian Navy, Official

The German type transport *Rimac* (ex-Eten, ex-Rhakotis) was scrapped in July 1960. The fleet supply ships and oilers *Cabo Blanco* (ex-Mariscall Castilla, ex-Preserver) and *Organus* (ex-Olaya) of the Canadian type, were scrapped in 1961.

WATER CARRIER

MANTILLA (ex-US YW 122) 141

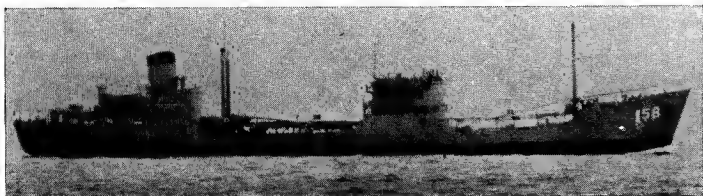
Displacement, tons 1 235 full load
Dimensions, feet 174 x 32
Guns 1 MG forward
Capacity, gallons 200,000

Former US water barge. Built by Henry C. Grebe & Co Inc, Chicago, Ill. Lent to Peru in July 1963.

OILERS**2 "Sechura" Class****SECHURA 154**

Displacement, tons 8 700
 Measurement, tons 4 300 gross; 6 000 deadweight
 Dimensions, feet 360 wl, 385 oa × 52 × 21·2 max
 Main engines Burmeister & Wain diesel; 2 400 bhp = 12 knots
 (13·25 knots on trials)
 Boilers 2 Scotch with Thornycroft oil burners for cargo tank cleaning

Sechura, built by John I. Thornycroft & Co Ltd, Woolston Southampton, England, was laid down late in 1952, launched on 12 Nov 1954 and completed in Feb 1955. Designed for transferring fuel to warships at sea. *Zorritos*, built by Servicio Industrial de la Marina in the Arsenal Naval del Callao, Peru, was laid down on 8 Oct 1955, and launched on 8 Oct 1958. Pennant Nos were changed from 54 and 58 to 154 and 158, respectively, in 1964. A photograph of *Sechura* appears in the 1956-57 to 1963-64 editions.



ZORRITOS

1964, Peruvian Navy, Official

2 "Talara" Type**LOBITOS 159**

Displacement, tons 7 000
 Measurement, tons 4 800 deadweight; (about 35 000 barrels)
 Dimensions, feet 336·2 × 50·9 × 22·5
 Main engines Burmeister & Wain diesel; Type 562, V7-F115, 2 400 bhp = 12 knots

Talara, built in Denmark to the requirements of Lloyd's Register, was laid down early in 1953 by Burmeister & Wain's Maskin-Og Skibsbygger, Copenhagen, and completed in 1955. Pennant No. changed from 53 to 153 in 1964.

LOBITOS, built by Servicio Industrial de la Marina in the Arsenal Naval del Callao, Peru, was launched in May 1965.

A photograph of *Talara* appears in the 1955-56 to 1966-67 editions.



LOBITOS

1967, Peruvian Navy, Official

TUGS**RIOS (ex-USS *Pinto*, ATF 90) 123**

Displacement, tons 1 235 standard; 1 675 full load
 Measurement, tons 195 wl; 205 oa × 38·5 × 15·5 max
 Main engines 4 GM diesel electric; 3 000 bhp = 16·5 knots

Former United States fleet ocean tug of the "Apache" class. Launched on 5 Jan 1943. Transferred to Peru in 1960 and delivered in Jan 1961. Fitted with powerful pumps and other salvage equipment.



RIOS

1967, Peruvian Navy, Official

UNANUE (ex-USS *Wateree*, ATA 174) 136

Displacement, tons 534 standard; 852 full load; official revised figure
 Dimensions, feet 133·7 wl; 143 oa × 33·9 × 13·2
 Main engines GM diesel-electric; 1 500 bhp = 13 knots

Former United States auxiliary ocean tug of the "Maricopa" class. Built by Livingston SB Co, Orange, Texas. Laid down on 5 Oct 1943; launched on 18 Nov 1943 and completed on 20 July, 1944. Purchased from the USA in Nov 1961 under MAP.

PARAGUAY**Strength of the Fleet**

4 River Gunboats, 2 Patrol Launches, 4 River Patrol Boats

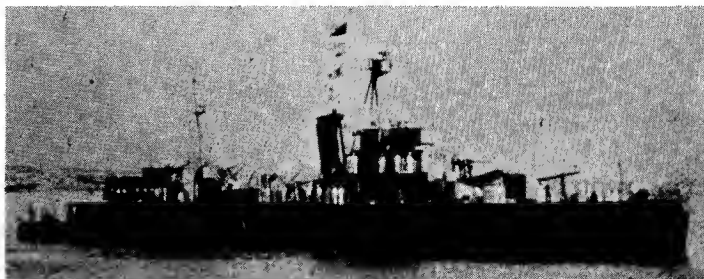
Personnel

1967: 1,900 officers and men, including coastguard and marines

RIVER GUNBOATS (*Canoneros*)**2 "Humaita" Class****HUMAITA (ex-Capitan Cabral) C 2****PARAGUAY (ex-Comodoro Meya) C 1**

Displacement, tons 636 standard; B65 full load
 Dimensions, feet 231 × 35 × 5·3
 Guns 4—4·7 in; 4—3 in AA; 2 MG
 Mines 6
 Armour ·5 in side amidships; ·3 in deck; ·B in CT
 Main engines Parsons geared turbines; 2 shafts; 3 800 shp = 17 knots
 Boilers 2
 Oil fuel, tons 150
 Radius, miles 1 700 at 16 knots
 Complement 86

Rated as gunboats but also fitted for minelaying. The armour is of high tensile steel. Both built by Odero, Genoa, laid down in Apr 1929, launched in 1930, and completed in May 1931.



PARAGUAY

Official

2 Ex-Argentinian Minesweepers**BOUCHARD M 7****PARKER M 11**

Displacement, tons 450 standard; 620 normal; 650 full load
 Dimensions, feet 164 pp; 197 oa × 24 × B·5 max
 Guns 4—40 mm Bofors AA; 2 MG
 Main engines 2 sets MAN 2-cycle diesels; 2 000 bhp = 16 knots
 Oil fuel, tons 50
 Radius, miles 3 000 at 12 knots
 Complement 70

Former Argentinian minesweepers of the "Bouchard" class. Built at Rio Santiago Naval Shipyard and Sanchez Shipyard, San Fernando, respectively. Laid down in 1935 and 1936. Launched on 20 Mar 1936 and 2 May 1937. Can carry mines. Transferred from the Argentinian Navy to the Paraguayan Navy in Apr 1964.

PATROL LAUNCHES (*Launchas Patrulleras*)**2 Ex-U.S. Coast Guard Cutters****P 1 (ex-USCGC 20417)****P 2 (ex-USCGC 20418)**

Displacement, tons 16
 Dimensions, feet 45·5 oa × 13·5 × 3·5
 Guns 2—20 mm AA
 Main engines 2 petrol motors; 2 shafts; 190 hp = 20 knots
 Complement 10

Of wooden construction. Built in the United States in 1944. Acquired from the United States Coast Guard in 1944.

RIVER PATROL BOATS (*Avisos de Guerra*)**CORONEL MARTINEZ A 2**

Displacement, tons 80
 Dimensions, feet 71·5 × 18 × 8·2
 Guns 1—3 in; 2—37 mm
 Main engines 150 ihp = 6·5 knots

Medium type of river petrol boat, military transport, and general utility craft.

CAPITAN CABRAL (ex-Adolfo Riquelme) A 1

Displacement, tons 180 standard; 206 full load
 Dimensions, feet 98·5 pp; 107·2 oa × 23·5 × 9·8
 Guns 1—3 in Vickers; 2—37 mm Vickers; 4 MG
 Main engines Triple expansion; 1 shaft; 300 ihp = 9 knots
 Complement 47

Former tug. Built by Werf-Conrad, Haarlem. Launched in 1907. Of wooden construction. A photograph appears in the 1954-55 to 1953-64 editions.

TENIENTE HERREROS A 3

Displacement, tons 41
 Dimensions, feet 63·2 × 11 × 6·8
 Guns 4 MG
 Main engines 300 ihp = 5·5 knots

Small type of river patrol boat and service craft. Built in the Netherlands in 1908.

YLT 559 A 4

Dimensions, feet 66·2 × 17 × 5
 Main engines Diesel; 300 bhp

Small harbour tug YTL 559 transferred to Paraguay by the USA under the Military Aid Program in May 1963. Built by Everett Pacific SB & DD Co, Wash.

PHILIPPINES

Administration	Strength of the Fleet	Ships
Flag Officer in Command, Philippine Navy: Commodore Heracleo J. Alano, PN	12 Escort Patrol Vessels, 2 Command Ships, 2 Coastal Minesweepers, 22 Patrol Boats, 34 Support Ships and Service Craft.	Names are those of geographical locations, mostly provinces, and are prefixed by RPS (Republic of Philippines Ship).
Diplomatic Representation	Personnel	Mercantile Marine
Naval, Military and Air Attaché in London: Colonel Isabelo Ruiz Castro	1967: 5,000 officers and men	Lloyd's Register of Shipping: 209 vessels of 604,492 tons

ESCORT PATROL VESSELS

CEBU (ex-PCE 881) PS 28	LEYTE (ex-PCE 885) PS 30
ILOILO (ex-PCE 879) PS 32	NEGROS OCCIDENTAL (ex-PCE 884) PS 29
	PANGASINAN (ex-PCE 891) PS 31
Displacement, tons	640 standard; 903 full load
Dimensions, feet	180 wl; 184.5 oa x 33 x 9.5
Guns	1-3 in, 3-40 mm (PS31, 6-40 mm); 4-20 mm
Main engines	2 GM diesels; 2 shafts; 1 800 bhp = 15 knots

Former US escorts. Built in Portland, Oregon, USA, by Albina Eng & Mach Works (28, 29, 30) and Willamette Iron & Steel Corp (31, 32). All launched in 1943-44. A photograph of *Leyte* appears in the 1956-57 to 1964-65 editions.



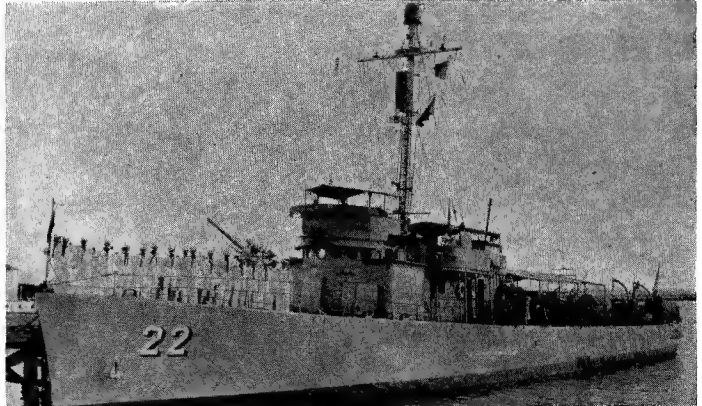
NEGROS OCCIDENTAL 1965, Philippine Navy, Official

RIZAL (ex-USS <i>Murrelet</i> , MSF 372, ex-AM 372) PS 69	
Displacement, tons	890 standard; 1 250 full load
Dimensions, feet	215 wl; 221 oa × 32.2 × 10.8 max
Guns	2—3 in, 50 cal (single); 4—40 mm AA (2 twin)
A/S	1 mortar; 2 DCT
Main engines	Diesel-electric; 2 shafts; 3 532 bhp = 18 knots

Former US fleet minesweeper of the "Auk" class. Built by Savannah Machine & Foundry Co. Launched on 24 Dec 1944. Transferred on 18 June 1965. Mine-sweeping gear removed. USS *Vigilance*, MSF 324, also being transferred.

BATANGAS (ex-PC 1134) PS 24	CAPIZ (ex-PC 1564) PS 27
BOHOL (ex-PC 1131) PS 22	NUEVA ECIJA (ex-PC 1241) PS 25
Displacement, tons	330 standard; 450 full load
Dimensions, feet	173.7 oa x 23 x 10.8
Guns	1-3 in dp, 1-40 mm AA; 5-20 mm AA
Main engines	2 GM diesels; 2 shafts; 3 600 bhp = 18 knots

Former US submarine chasers of steel construction. Built in 1942-44. Transferred in 1947-48. *Negros Oriental*, C 26 (ex-PC 1563), sank in a typhoon at Guam in Nov 1962, was raised, but stricken on 24 Jan 1963.



BOHOL 1965, Philippine Navy, Official

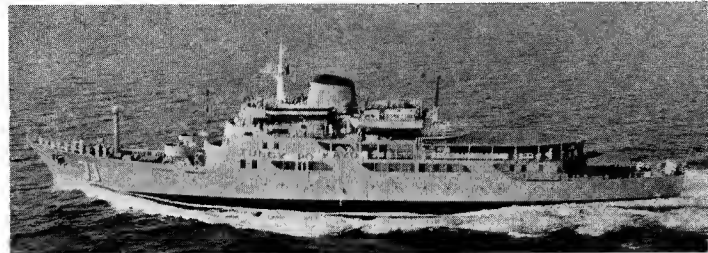
LAGUNA (ex-PCS 1403) PG 12	TARLAC (ex-PCS 1399, ex-YMS 450) PG 11
Displacement, tons	230 standard; 300 full load
Dimensions, feet	136 oa x 24.5 x 8.5
Guns	1-3 in; 1-40 mm; 4-20 mm
Main engines	2 GM diesels; 2 shafts; 800 bhp = 14 knots

Former US submarine chasers of wooden construction. Built in 1943-44. Transferred in Jan 1948. Photograph of *Laguna* in the 1956-57 to 1961-62 edition.

COMMAND SHIPS

THE PRESIDENT (ex-Roxas, ex-Lapulapu) TP 777	
Measurement, tons	2 200 gross
Guns	2—40 mm; 2—20 mm AA
Main engines	8. & W. diesels; 2 shafts; 5 000 bhp = 16.5 knots

Formerly the Presidential Yacht. Acquired from Japan as reparation. Built at Ishikawajima, Japan. Launched in 1958 and completed in 1959. Originally named *Lapu-Lapu* after the chief who killed Magellan. On 9 Oct 1962 the ship was recommissioned and renamed *Roxas* after the late Manuel Roxas, first President of the Philippine Republic. Renamed *The President* in 1967. The command ship *Rajah Soliman* D 66 (ex-USS *Bowers*, APD 40, ex-DE 637) sank in a typhoon at Bataan National Shipyard in June 1964, was raised, but stricken on 3 Dec 1964. The escort ship USS *Booth*, DE 170, and the high speed transport USS *Hayter*, APD 80 (ex-DE 212) are to be transferred in 1967.



THE PRESIDENT 1965, Philippine Navy, Official

MOUNT SAMAT (ex-Pagasa, ex-Santa Maria, ex-Pagasa, ex-Apo 21, ex-USS <i>Quest</i> , AM 281) TP 21	
Displacement, tons	650 standard, 945 full load
Dimensions, feet	180 wl; 184.5 oa x 33 x 9.8
Guns	1—3 in, 4—20 mm AA
Main engines	Diesel; 2 shafts; 1 710 bhp = 14 knots

Former US fleet minesweeper. Built by Gulf S8 Corpn. Launched on 16 Mar 1944. Converted into Presidential Yacht. Renamed *Mount Samat* in 1967.



MOUNT SAMAT 1965, Philippine Navy, Official

COASTAL MINESWEEPERS

ZAMBALES (ex-USS <i>MSC</i> 218) PM 55	ZAMBOANGA DEL NORTE (ex-USS <i>MSC</i> 210) PM 56
Displacement, tons	335 standard; 375 full load
Dimensions, feet	138 pp; 144 oa x 27 x 8.3
Main engines	GM diesels; 2 shafts; 880 bhp = 14 knots

Non-magnetic coastal minesweepers of the US "Bluebird" class. *Zambales* was built by Bellingham Shipyard Co, Washington, laid down in Aug 1954 and launched on 25 Feb 1955. Transferred on 7 Mar and 23 Apr 1956, respectively.

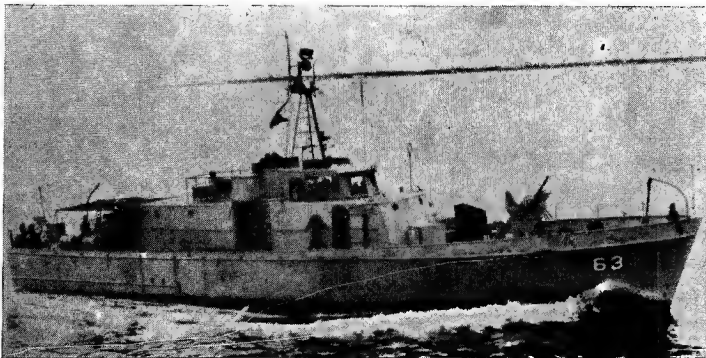


ZAMBOANGA DEL NORTE 1965, Philippine Navy, Official

PATROL BOATS

MISAMIS OCCIDENTAL (ex-PGM 38) G 53	
AGUSAN (ex-PMG 39) G 61	PALAWAN (ex-PGM 42) G 64
ANTIQUÉ (ex-PGM 36) G 51	ROMBLON (ex-PGM 41) G 63
CAMARINES SUR (ex-PGM 33) G 48	SULU (ex-PGM 34) G 49
CATAN DUANES (ex-PGM 40) G 62	YACHI (ex-PGM) G 57
LA UNION (ex-PGM 35) G 50	YANGA (ex-PGM) G 59
MASBATE (ex-PGM 37) G 52	YUNDI (ex-PGM) G 60
Displacement, tons 95 standard; 143 full load	
Dimensions, feet 110 × 17 × 6.5	
Guns 1—60 mm mortar; 2—40 mm AA; 4—50 cal MG	
Main engines Diesels; 2 shafts; 1 540 bhp = 18 knots	

G 48-53 were built by Georgia Shipbuilding Co, St Mary's Georgia. Motor gunboats with the basic design of the former 110 ft SC type of the US Navy. The first four were delivered to the Philippine Navy in 1955 and G 52 and G 53 in 1956. G 61-64 were built by Tacoma Boatbuilding Co, Tacoma, Washington, for transfer under MAP. All steel, G 61, completed in Aug 1959, and G 62 were transported to the Philippines aboard ship in Feb 1960, followed by G 63 and G 64 in Apr 1960. A photograph of *Camarines Sur* appears in the 1956-57 to 1961-62 editions.



ROMBLON

1962, courtesy Mr W. H. Davis

ALERT (ex-SC 1267) P 16	MALAMPAY SOUND (ex-SC 1274) P 20
CAVITE (ex-SC 981) P 19	MOUNTAIN PROVINCE (ex-SC 736) P 15
	SURIGAO (ex-SC 747) P 17
Displacement, tons 85 standard; 130 full load	
Dimensions, feet 111 oa × 17 × 6	
Guns 1—40 mm AA, 3—20 mm AA	
Main engines Diesels; 2 shafts; 1 000 bhp = 14.18 knots	

Former US small submarine chasers of wooden construction. Built in 1942-43. Transferred in 1946-48.

HYDROFOIL PATROL BOATS

CAMIGUIN H 72	SIQUIJOR H 73
Displacement, tons 28	
Measurement, tons 60 gross	
Dimensions, feet 68.5 × 15.8 (24.3 foils) × 7	
Guns 1—20 mm AA	
A/S weapons 1 torpedo launcher	
Main engines Mercedes Benz diesel (MB 20, 12 cyl); 2 shafts; 1 250 bhp = 38 knots	

Built by Cantiere Navale Leopardo Rodriguez, Messina, Sicily. Laid down on 26 May and 28 Oct 1964. Completed in Apr 1965. For military and police patrol.

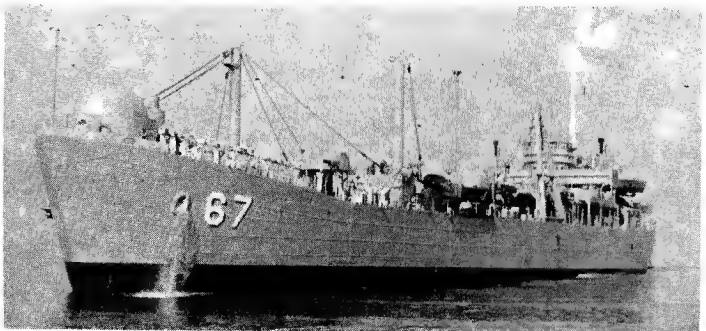
BALER H 74	NONTOC H 75
Measurement, tons 60 gross	
Dimensions, feet 68.9 × 15.7 × 24.6 over foils	
Guns MG fore and aft	
Main engines Ikegai-Mercedes Benz diesel; 3 200 bhp = 37.8 knots (32 cruising). Also auxiliary engine	
Complement 15 (3 officers, 12 ratings)	

Built by Hitachi Zosen, Kanagawa, Japan. Completed in Dec 1966. For smuggling prevention.

REPAIR SHIP

AKLAN (ex-USS <i>Romulus</i> , ARL 22, ex-LST 926)
Displacement, tons 1 625 light; 4 100 full load
Dimensions, feet 316 wl; 328 oa × 50 × 11
Guns 8—40 mm AA
Main engines GM diesels; 2 shafts; 1 800 bhp = 11.6 knots

Former US landing craft repair ship transferred under MAP in Nov 1961.



AKLAN

1965, Philippine Navy, Official

LANDING SHIPS

ALBAY (ex-LST 865) LT 39	BULACAN (ex-LST 843) LT 38
MISAMIS ORIENTAL (ex-LST 875) LT 40	
Displacement, tons 1 625 light; 4 080 full load	
Dimensions, feet 316 wl; 328 oa × 50 × 14 max	
Guns 7—40 mm AA; 2—20 mm AA	
Main engines Diesel; 2 shafts; 1 800 bhp = 12 knots	

Former US landing ships of the LST type. LST 72 and LCU 117 were sold.

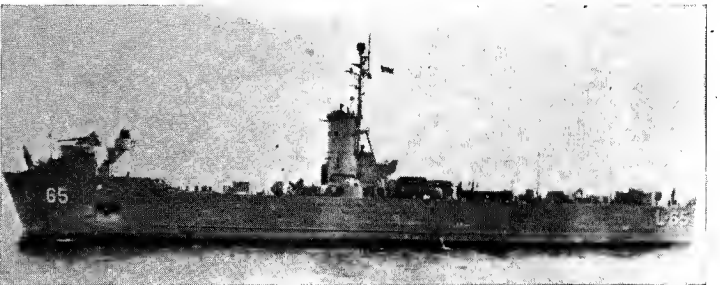


ALBAY

1965, Philippine Navy, Official

BATANES (ex-USS LSM 236) LP 65	ISABELA (ex-USS LSM 463) LP 41
ORIENTAL MINDORO (ex-US LSM 320) LP 68	
Displacement, tons 743 beaching; 912 full load	
Dimensions, feet 196.5 wl; 204 oa × 34.5 × 8.3	
Guns 2—40 mm AA	
Main engines Direct drive diesel; 2 shafts; 2 800 bhp = 12.5 knots	

Former medium landing ships. *Batanes* was transferred on 15 Sep 1960. *Isabela* was refloated on 1 Jan 1964 after being aground since Sep 1963.



BATANES

1962, courtesy Mr W. H. Davis

OILERS

LAKE NAUJAN (ex-US YO 173) Y 43
Displacement, tons 521 standard; 1 400 full load
Dimensions, feet 174 oa × 32 × 13.2
Guns 2—20 mm
Main engines Diesel; 560 bhp = 8 knots

Ex-US YO type. A photograph appears in the 1953-54 to 1960-61 editions.

LIGHTHOUSE TENDERS

BOJEADUR (ex-US FS 203) L 46	LAUIS LEDGE (ex-US FS 185) L 45
Displacement, tons 470 standard; 811 full load	
Dimensions, feet 180 oa × 32 × 10	
Main engines Diesel; 2 shafts; 1 000 bhp = 11 knots	

Ex-US FS type. Photograph of *Louis Ledge* in 1956-57 and 1957-58 editions.

PEARL BANK (ex-US OL 4) L 47
Displacement, tons 162 standard; 301 full load
Dimensions, feet 120 oa × 24 × 8
Guns 2—20 mm AA
Main engines Diesel; 2 shafts; 240 bhp = 6 knots

Ex-OL type. A photograph appears in the 1953-54 to 1957-58 editions.

WATER CARRIER

LAKE LANAÓ (ex-US YW 125) Y 42
Displacement, tons 1 235 full load
Dimensions, feet 174 oa × 32 × 15
Guns 2—20 mm AA
Main engines Diesel; 640 bhp = 9 knots

TUGS

IFUGAO (ex-US ATR 96) R 44
Displacement, tons 534 standard; 852 full load
Dimensions, feet 134.5 wl; 413 oa × 33 × 13.5
Guns 1—3 in; 2—20 mm
Main engines Diesel-electric; 1 500 bhp = 13 knots

Rescue tug returned to US from United Kingdom, and then transferred to the Philippines. Photograph in the 1956-57 to 1957-58 editions.

IGOROT (ex-YTL 572) 222	MARANAO (ex-YTL 574) 221
	MANGYAN (ex-ST 1312) 223

Small harbour tugs. US YTL 429 and 449 were transferred under MAP in 1963.

COASTGUARD UTILITY BOATS. 15 ex-US CG Cutters, Nos 100-114. No names assigned.

POLAND

Administration

Commander of the Polish Navy:
Vice-Admiral Zdzislaw Studzinski

Chief of Naval Staff:
Rear-Admiral Ludwik Janczyszyn

Diplomatic Representation

Naval, Military and Air Attaché in London:
Colonel J. Kaczorek

Naval, Military and Air Attaché in Washington:
Colonel Bronislaw Jablonski

Strength of the Fleet

- 11 Submarines (Diesel Powered)
- 5 Destroyers
- 15 Fleet Minesweepers
- 4 Coastal Minesweepers
- 12 Guided Missile Patrol Craft
- 8 Patrol Vessels (Submarine Chasers)
- 17 Patrol Boats
- 50 Motor Torpedo Boats
- 17 Landing Craft
- 14 Support Ships and Auxiliaries

Ships

Polish warship names are prefixed by "O.R.P."

Personnel

1967: 20,000 (1,800 officers and 18,200 men)

Mercantile Marine

Lloyd's Register of Shipping:
403 vessels of 1,109,070 tons gross

SUBMARINES (Okrety Podwodne)

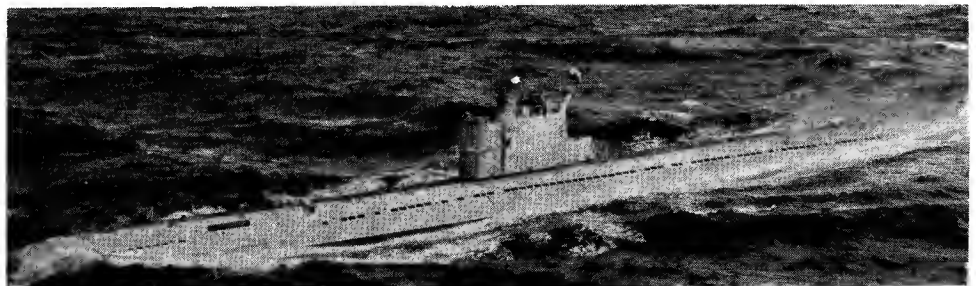
4 Ex-U.S.S.R. "W" Type

KONDOR **ORZEL 292** **SOKOL 293**

Displacement, tons 1 030 surface; 1 180 submerged
Length, feet (metres) 240 (73·2)
Beam, feet (metres) 22 (6·7)
Draft, feet (metres) 15 (4·6)
Torpedo tubes 6—21 in (533 mm), 4 bow, 2 stern
 18 torpedoes carried
Mines 40 mines or 18 torpedoes
Main engines Diesel electric, 4 000 hp; 2 shafts
 Electric motors, 2 500 hp
Speed, knots 17 on surface; 15 submerged
Radius, miles 1 300
Complement 60

A class of medium size long range submarines built in the USSR and transferred to the Polish Navy.

NOMENCLATURE. *Kondor* means Condor, *Orzel* means Eagle and *Sokol* means Falcon.



SOKOL

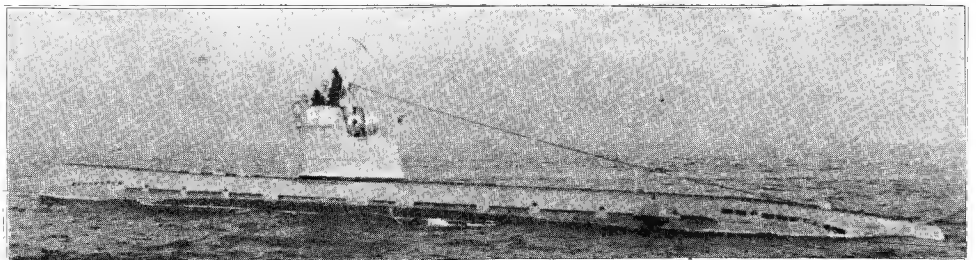
1966, Skyfotos

6 Ex-U.S.S.R. "M" Type

KASZUB 301 **MAZOWSZE (ex-Kurp)** 306
KRAKOWIAK 303 **MAZUR** 302
KUJAWIAK 305 **SLAZAK (ex-Podhalanin)** 304

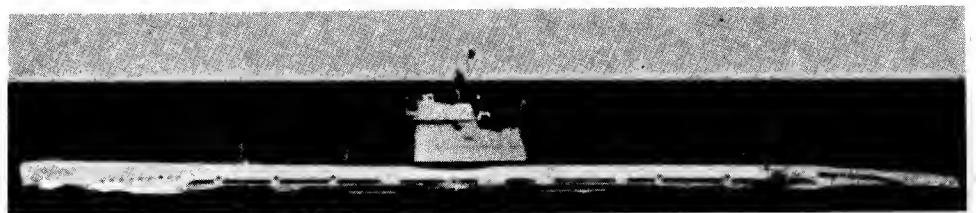
Displacement, tons 350 surface; 420 submerged
Length, feet (metres) 167·3 (51·0)
Beam, feet (metres) 16 (4·9)
Draft, feet (metres) 11·8 (3·6)
Guns, AA 1—37 mm
Torpedo tubes 2—21 in (533 mm)
Main engines Diesels 1 000 hp
 Electric motors 800 hp
Speed, knots 13 on surface; 10 submerged
Radius, miles 4 000 at 8 knots on surface
 90 at 3 knots submerged
Oil fuel (tons) 21
Complement 24

Former Soviet "MV" Class, coastal submarines M 100-105. All built in 1944-50. Transferred to the Polish Navy in 1956-57. One (said to be *Kurp*) ran aground and was so badly damaged that she was at one time reckoned a total loss, but it is reported that she has been renamed *Mazowsze*.



KASZUB

1965, Polish Navy, Official



KUJAWIAK

Sergei Romanov

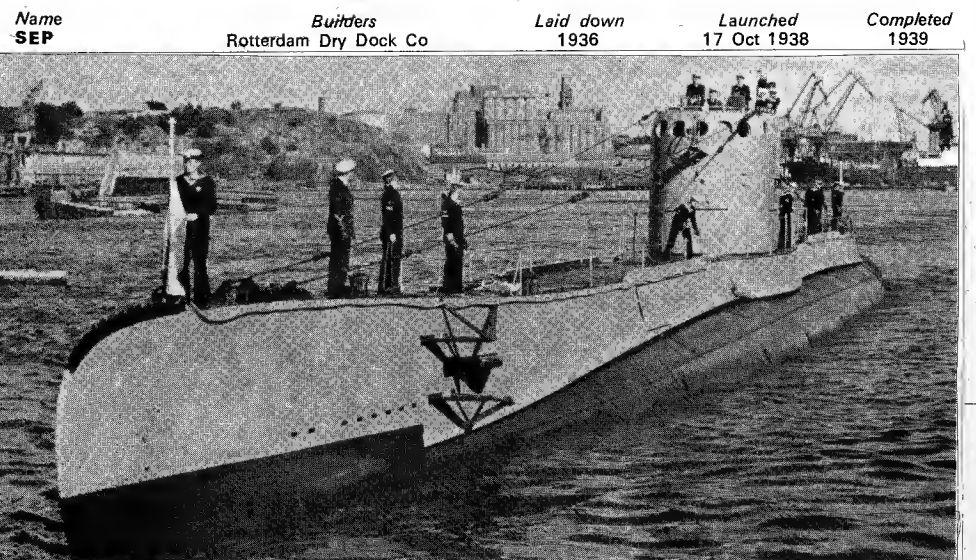
1 Netherlands Built

Displacement, tons 1 092 surface; 1 450 submerged
Length, feet (metres) 273·5 (83·4) pp; 275·5 (84·0) oa
Beam, feet (metres) 22 (6·7)
Draft, feet (metres) 13 (4·0)
Guns, surface 1—4 in (105 mm)
Guns, AA 2—40 mm
Torpedo tubes 8—21 in (533 mm)
Main engines 2 Sulzer diesels, total 4 740 hp
 Electric motors, 1 000 hp
Speed, knots 19 on surface; 9 submerged
Complement 56

Sep means *Vulture*. Fitted for minelaying. Now over age and used for initial sea training purposes. Another photograph appears in the 1939 to 1957-58 editions. Pennant No. 291. Sister ship *Orzel* (Eagle) was lost in June 1940.

DISPOSALS

The three submarines of the "Wilk" class, *Rys*, *Wilk* and *Zbik*, were broken up in 1957.



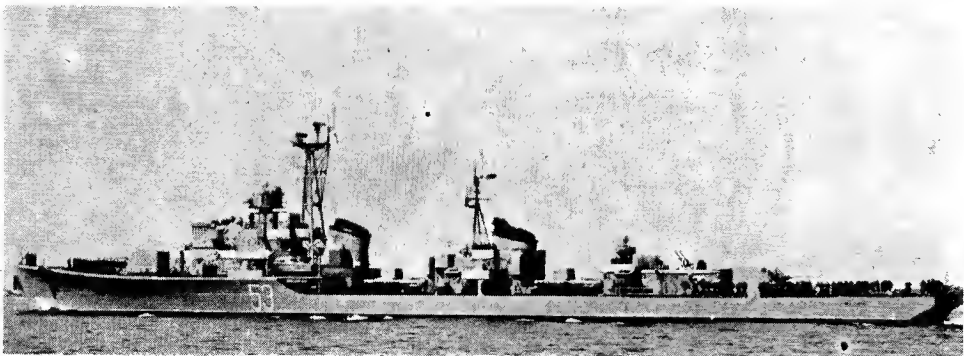
SEP

1965, Polish Navy, Official

DESTROYERS (Niszczyciele)

4 Ex-U.S.S.R. "Skory" Class

GROM (ex-Smetlivy)	WICHER (ex-Skory)
Displacement, tons	2 600 standard; 3 500 full load
Length, feet (metres)	393.8 (120.0) pp; 420 (128.0) oa
Beam, feet (metres)	41 (12.5)
Draft, feet (metres)	15 (4.5)
Guns, surface	4—5.1 in (130 mm), 2 twin mounts
Guns, AA	2—3 in (76 mm); 7—37 mm
A/S	4 DCT
Torpedo tubes	10—21 in (533 mm) 2 quintuple
Mines	80 capacity
Boilers	4 high pressure
Main engines	Geared turbines
	70 000 shp; 2 shafts
Speed, knots	36
Radius, miles	4 000 at 15 knots
Oil fuel (tons)	700
Complement	280



GROM

1959, Sergei Romanov

Former Soviet destroyers of the first "Skory" type. *Wicher* was in fact the prototype of the class. Two were delivered by the USSR to Poland on 15 Dec 1957 (*Grom*) and 28 June 1958 (*Wicher*). Pennant

nos. 53 and 54, respectively "*Grom*" means Thunderbolt "*Wicher*" means Hurricane.

Two more of the "Skory" class are reported to have transferred from the USSR to Poland in 1961.



WICHER

1965, Polish Navy, Official

Name	No.	Builders	Laid down	Launched	Completed
BLYSKAWICA	271	J. Samuel White & Co Ltd, Cowes, Isle of Wight	1 Oct 1935	1 Oct 1936	1 Oct 1937

1 British Built

Displacement, tons	2 144 standard; 3 383 full load
Length, feet (metres)	357 (108.8) pp; 374 (114.0) oa
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	10.2 (3.1)
Guns, dual purpose	8—4 in (102 mm)
Guns, AA	10—37 mm
A/S	4 DCT; 22 DC and racks
Torpedo tubes	3—21 in (533 mm) tripled
Boilers	4 three-drum type
Main engines	Parsons geared turbines
	54 000 shp; 2 shafts
Speed, knots	39
Complement	180



BLYSKAWICA

1965, Polish Navy, Official

Name means Lightning. Originally fitted for minelaying, and could carry 7 mines; but no longer has minelaying capabilities. Bows were strengthened for ice navigation. The original armament was 7—4.7 mm AA, 4 MG, 6—21 inch tubes (tripled), 2 DCT. The ship was completely dismantled in 1958 down to the hull, and superstructure was entirely rebuilt and armament modified in 1959-60.

ENGINEERING. Boilers work at 385 lbs per sq in pressure with 200 degrees of superheat. Ship exceeded her designed speed on trials.

DISPOSAL The old destroyer *Burza* was officially withdrawn from active service with the Polish Navy in 1962 to be used as a museum ship.

ESCORT VESSEL

New Construction

Displacement, tons	1 030 standard;	Guns, AA	8—37 mm
Length, feet (metres)	288.8 (88.0)	Torpedo tubes	3—21 in (533 mm)
Beam, feet (metres)	31.5 (9.6)	Mines	Fitted for minelaying
Draft, feet (metres)	10.5 (3.2)	Main engines	Geared steam turbines
Guns, dual purpose	3—3.9 in (100 mm)		24 000 shp; 2 shafts
		Speed, knots	28

The construction of an escort vessel or frigate is in the early stages. A transitional type based on the design of the Soviet "Riga" class, she is being built in the Polish yard at Gdynia.

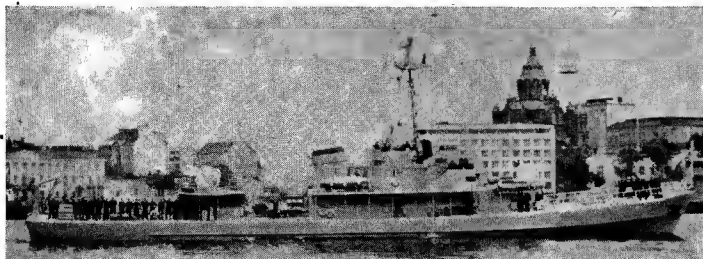
FLEET MINESWEEPERS

"Orlik" Class

JASTRAB 615**614****ORLIK 613**

Displacement, tons 500
 Dimensions, feet 190.3 × 24.6 × 8.2
 Guns 6—25 mm AA

Flushdecked minesweepers of a new type built at the Stocznia Yard in 1963. *Jastrab* and *Orlik* commissioned in 1964.

**JASTRAB**

1966, Col Borg

12 Ex-U.S.S.R. "T 43" Type

BIZON 605
BOBR 606
DELFIN 611

DZIK 604
FOKA 609
LOS 603

MORS 610
ROSOMAK 607
TUR 602

ZBIK 608
ZUBR 601
612

Displacement, tons 500 standard; 600 full load
 Dimensions, feet 200 × 27.2 × 9
 Guns 4—37 mm AA; 8—13 mm MG AA
 Main engines Diesels; 2 shafts; speed = 18 knots
 Complement 60

Fleet minesweepers of the Soviet "T43" type built in Poland at Stocznia Gdynska. Gdynia in 1957-62.

A photograph of *Tur* appears in the 1958-59 edition, and of *Los* in the 1959-60 to 1964-65 editions.

**ZBIK**

1965, Polish Navy, Official

COASTAL MINESWEEPERS (Tralowce)

4 "Bird" Class

CZAJKA (10 Apr 1935) D 45
MEWA (1935)

RYBITWA (26 Apr 1935) D 46
KOMPAS, ex-Zuaw (22 Aug 1938)

Displacement, tons 140 standard; 183 full load
 Dimensions, feet 139.5 × 21.3 × 5.5
 Guns 2—37 mm; 2 MG, except *Kompas*, none
 Main engines Diesel; 1 040 bhp = 15 knots
 Complement 30

All built in Poland. *Mewa* and *Kompas* at Gdynia, *Czajka* and *Rybitwa* at Modlin. Launch dates above. Recovered from German hands in 1945. *Czajka* (meaning Lapwing) had been renamed *Westerplatte*. *Mewa* means Seagull, and *Rybitwa*, Tern; these two were numbered MT 6 and 7 respectively, by the Germans. *Kompas* is used as a surveying vessel, HG 11. (20 minesweeping boats were built in Polish yards, 1955-60).

A photograph of *Mewa* appears in the 1958-59 to 1964-65 editions.

**RYBITWA**

1966

GUIDED MISSILE PATROL CRAFT

2 U.S.S.R. "Osa" Type

No. 080

Displacement, tons 160 standard; 200 full load
 Dimensions, feet 121.3 pp; 131.5 oa × 20 × 6.5
 Guided weapons 4 large hood type missile launchers in two pairs abreast
 Guns 4—25 mm (2 twin, 1 forward, 1 aft)
 Main engines 3 diesels; 4 800 bhp = 35 knots
 Complement 25

Fast vessels of the motor torpedo boat type but with a large hull and four missile launchers in two pairs abreast the superstructure as compared with the earlier motor torpedo boat conversions which have one pair of launchers aft. Reported to have a surface-to-surface missile range of about 15 miles.



"Osa" class No. 080

1966, Col Borg

10 U.S.S.R. "Komar" Type**KG 81**

Displacement, tons 75 standard; 100 full load
 Dimensions, feet 88 oa × 21 × 6
 Guided weapons 2 hood type missile launchers, one either side aft.
 Guns 2—25 mm AA (1 twin forward)
 Main engines 3 diesels; 4 800 bhp = 40 knots
 Complement 20

A new type of strike craft converted from "P 6" class motor torpedo boats. Fitted with two surface-to-surface missile launchers aft in hooded casings at a steep angle to the deck level.

PATROL VESSELS

8 Ex-U.S.S.R. "Kronstadt" Class

CZUINY 368
GROZNY 362

NIEUGIETY 361
WYTRWALY 367

ZAWZIETY 363
ZRECHNY 366

ZWINNY 365
ZWROTNY 364

Displacement, tons 300 standard; 350 full load
 Dimensions, feet 167.3 × 19.3 × 9
 Guns 1—3.9 in; 2—37 mm AA; 4—13 mm MG AA
 Main engines 2 diesels; speed = 27 knots
 Complement 40

Former Soviet submarine chasers of the "Kronstadt" class. Four built in 1953 were acquired by Poland in 1957. *Grozny*, *Wytrwaly*, *Zieczny* and *Zwinny* (names mean Strong, Energetic, Clever and Speedy), were delivered on 15 Dec 1957. A photograph of *Zwrotny* appears in the 1958-59 to 1964-65 editions.

**NIEUGIETY**

1965, Polish Navy, Official

PATROL BOATS

20 "OP" Type

OP 101 OP 103 OP 105 OP 107 OP 109 OP 111 OP 201 et seq
OP 102 OP 104 OP 106 OP 108 OP 110 OP 112 OP 212 et seq

Displacement, tons 120
 Dimensions, feet 124.7 × 19.2 × 5
 Guns 2—37 mm AA depth charges
 Main engines Diesels; speed 20 knots

OP 101-108 were launched at Gdynia in 1956. Eight submarine chasers of the "Gdansk" class including OP 212, built in 1960, four units of the "Oksywie" class, and four of the "Obluze" class are also reported. The latter in series construction since 1965 at Okyswie Shipyard are an improved version but some hulls, 134 × 19 × 7 feet, 2 twin 37 mm, depth charge racks.

9 "KP" Type

KP 118 KP 120 KP 122 KP 124 KP 126
KP 119 KP 121 KP 123 KP 125

Displacement, tons 60
 Guns 2 MG AA (in twin mounting)
 Main Engines 3 motors; speed 15 knots

Small patrol boats reported to be under the jurisdiction of the Frontier Guard.

MOTOR TORPEDO BOATS*(Scigacze torpedowe)***20 Ex-U.S.S.R. "P 6" Type**

KT 93	KT 97	KT 101	KT 105	KT 109
KT 94	KT 98	KT 102	KT 106	KT 110
KT 95	KT 99	KT 103	KT 107	KT 111
KT 96	KT 100	KT 104	KT 108	KT 112

Displacement, tons 68 full load
 Dimensions, feet 83 × 20 × 6 max
 Guns 4—25 mm AA; 8 DC
 Tubes 2—12 in
 Main engines 4 diesels; 4 800 bhp = 43 knots

Acquired from the USSR in 1957-58. (A new series of MTB's of Polish design, with gas turbines, is reported to have been constructed in Polish yards).

20 Ex-U.S.S.R. "PA 5" Type

KT 400 (ex-83)	KT 405 (ex-88)	KT 410	KT 415
KT 401 (ex-84)	KT 406 (ex-89)	KT 411	KT 416
KT 402 (ex-85)	KT 407 (ex-90)	KT 412	KT 417
KT 403 (ex-86)	KT 408 (ex-91)	KT 413	KT 418
KT 404 (ex-87)	KT 409 (ex-92)	KT 414	KT 419

Displacement, tons 50 standard
 Dimensions, feet 85.3 × 20 × 6
 Guns 4—25 mm AA (two twin mountings)
 Tubes 2—21 in
 Main engines Diesels; speed 48 knots approx

Motor torpedo boats of the Soviet "PA 5" class. Launched from 1956 onwards.



MTB 409

1965, Polish Navy, Official



No. 405

1966, Col Borg

10 Ex-U.S.S.R. "PA 3" Type

KT 71	KT 73	KT 75	KT 77	KT 79
KT 72	KT 74	KT 76	KT 78	KT 80

Displacement, tons 40 standard; 50 full load
 Dimensions, feet 85 × 20 × 6
 Guns 4—25 mm AA (two twin)
 Tubes 2—21 in
 Main engines Diesels; speed = 40 knots

Ex-Soviet boats of the "PA 3" type. Built of wood. Launched in 1953-55.

LANDING CRAFT**7 German Design**

Displacement, tons 300 full load
 Dimensions, feet 131 × 26 × 5 max
 Guns 1—77 mm; 1—37 mm
 Main engines 3 diesels; 1 000 bhp = 12 knots
 Complement 19

Utility landing craft of German design. Carry vehicles, tanks or military equipment.

10 U.S. LST(5) Type

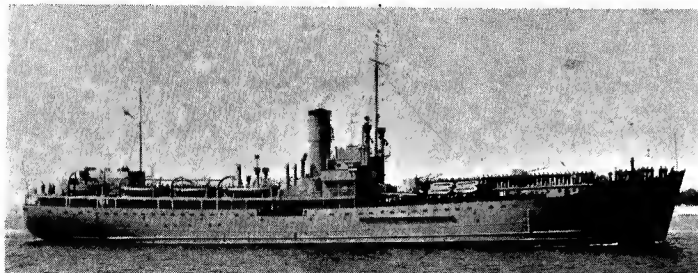
Displacement, tons 286 standard
 Dimensions, feet 177.5 × 32 × 4 max
 Main engines 3 diesels; 670 bhp = 8 knots
 Complement 15

Tank landing craft of American LST type for mechanised vehicles and stores.

TRAINING SHIPS *(Okrety szkolne)***GRYF** *(ex-Zetempowiec, ex-Opplern, ex-Omsk, ex-Empire Contees, ex-Irene Oldendorf)*

Measurement, tons 1 959 gross
 Dimensions, feet 282.2 × 44.2 × 18.8
 Guns 2—3.9 in; 4—37 mm AA
 Main engines Steam; 1 200 hp = 10 knots

Former German "Hansa" class ship. Built by Burmeister & Wain. Launched in 1944. Taken over in 1947. Transferred to the Navy in 1949. The name was changed from *Zetempowiec* to *Gryf* in 1957. Reported to be used as a hospital ship.



GRYF

Wright & Logan

ISKRA *(ex-Pigmy, ex-Iskra, ex-St Blanc, ex-Vlissinghr)*

Displacement, tons 560
 Dimensions, feet 128 × 25 × 10
 Main engines Diesels; 250 bhp = 7.5 knots
 Complement 30, plus 40 cadets

A three masted schooner with auxiliary engines. Built by Muller, Foxhol, Holland. Launched in 1917. A photograph of *Iskra* appears in the 1961-62 edition.

Dar Pomorza (ex-Prinz Eitel Friedrich), see full details and photograph in the 1961-62 edition, is a training ship of the Polish Merchant Marine.

SURVEYING VESSELS *(Okret hydrograficzne)***BALTYK**

Displacement, tons 1 000
 Measurement, tons 658 gross; 450 deadweight
 Dimensions, feet 194.3 oa; 175.3 pp × 29.5 × 14
 Main engines Steam; 1 000 hp = 11 knots

Trawler of B-10 type. Built in 1944 in Gdansk. Converted and structure altered. The hydrographic vessels *Zodiac* and *Koziorozec* (see details in the 1961-62 edition) are no longer on the Navy List. They belong to the Shipping Board of Gdansk.

OILERS *(Ropowiec)***ZOLW** *(ex-Stutthof)*

Displacement: 450 tons. Name changed from *Stutthof* to *Zolw* (Turtle) in 1961.

KRAB**SLIMAK**

Measurement 300 tons deadweight. *Krab* means Crab and *Slimak* means snail. Small tankers built in 1958 at Gdansk.

Z 1**Z 2****Z 3**

Lighters of 300 tons gross with diesels, converted into tankers. There is also the water tanker (wodotankowiec) *Plehmindorf* of 500 tons displacement.

AUXILIARIES**KABLOWIEC**

Measurement, tons 800 gross
 Dimensions, feet 130 × 15 × 5

Cable ship converted from a freighter-bunker ship.

MEDUZA

Dimensions, feet 98 × 15 × 8
 Complement 8

Fuel oil and replenishment vessel.

URAN**URANIA**

Displacement, tons 254
 Main engines Speed = 8 knots

Degaussing vessels of the British MMS 11 type.

PERKUM

Displacement, tons 800
 Main engines Diesel-electric; 2 shafts; 3 500 bhp = 12 knots

Icebreaker, twin screw, built in 1962 by P. K. Harris & Sons, Appledore, Devon, England.

PORTUGAL

Administration

Minister of Marine:
Rear-Admiral Fernando Quintanilha
Mendonça Dias

Chief of Naval Staff:
Vice-Admiral Armando Julio de Roboredo
e Silva

Diplomatic Representation

Naval Attaché in London:
Commander Leonel A. G. Cardoso, PoN

Naval Attaché in Washington
Commander Vasco Antonio Martins
Rodrigues, PoN

Personnel

1966: 15,000 (1,400 officers and 13,600 men)
including marines

Strength of the Fleet

- 3 Submarines (Diesel Powered)
- 1 Destroyer
- 13 Frigates
- 16 Patrol Vessels (1 Corvette, 1 Gunboat)
- 6 Ocean Minesweepers (2 Trawlers)
- 12 Coastal Minesweepers
- 35 Patrol Boats
- 60 Support Ships and Service Craft

Navy Estimates

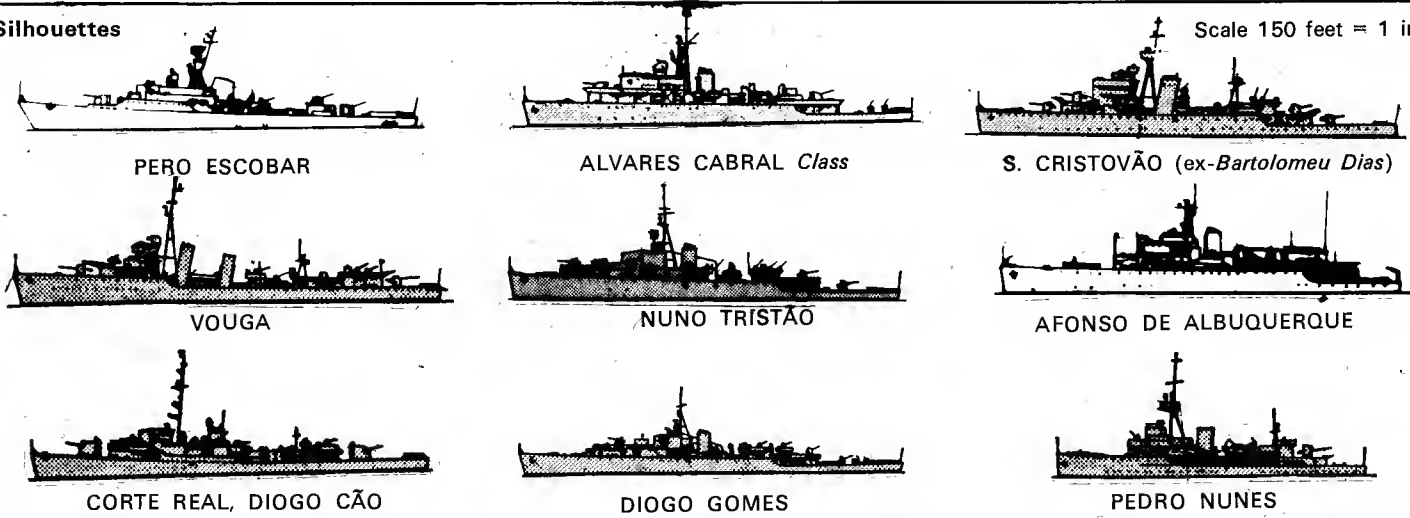
- 1962: Escudos 605,496,335
- 1963: Escudos 1,056,903,256
- 1964: Escudos 1,250,324,896
- 1965: Escudos 1,278,093,329
- 1966: Escudos 1,746,984,109
- 1967: Escudos 2,012,275,632

Mercantile Marine

Lloyd's Register of Shipping:
331 vessels of 748,808 tons gross

Silhouettes

Scale 150 feet = 1 inch



4 New Construction
French "Daphne" Type

Displacement, tons 869 surface; 1 043 submerged
Length, feet (metres) 190.2 (58.0)
Beam, feet (metres) 22.7 (6.9)
Draft, feet (metres) 15.5 (4.7)
Torpedo tubes 12—21.7 in (550 mm), 8 bow, 4 stern
Main engines SEMT-Pielstick diesels, 1 300 hp
Electric motors, 1 600 hp. 2 shafts
Speed, knots 16 on surface and submerged
Radius, miles 3 000 at 7 knots
Oil fuel (tons) 90
Complement 45 (6 officers; 39 men)

SUBMARINES (Submersiveis)

Name	No.	Builders	Laid down	Launched	Completed
ALBACORA	S 163	Dubigeon-Normandie	1 Feb 1965	13 Aug 1966	1 Jan 1968
BARRACUDA	S 164	Dubigeon-Normandie	1 Feb 1965	1 May 1967	1 Sep 1968
CACHALOTE	S 165	Dubigeon-Normandie	1 Dec 1965	1 May 1968	1 May 1969
DELFIN	S 166	Dubigeon-Normandie	1 Dec 1965	1 Jan 1969	1 Jan 1970

The prefabricated construction of these submarines was begun on 1 Oct 1964 at Dubigeon-Normandie Shipyard, Nantes, France. They are basically similar to the French "Daphne" type.

3 "Narval" Class
Ex-British "S" Class

Displacement, tons 715 standard; 859 surface; 1 008 submerged
Length, feet (metres) 217 (66.2) oa
Beam, feet (metres) 23.8 (7.2)
Draft, feet (metres) 10.5 (3.2)
Guns, dual purpose 1—4 in (102 mm)
Torpedo tubes 6—21 in (533 mm) in bow
Main engines Diesels, 1 900 hp
Electric motors, 1 300 hp
Speed, knots 14.75 on surface; 9 submerged
Radius, miles 5 000 at 10 knots
Oil fuel, (tons) 87
Complement 46 (5 officers, 41 men)

"S" Class patrol submarines purchased from Great Britain in 1948. Built by Cammell Laird & Co Ltd, Birkenhead. Designed for offensive operations in confined waters.

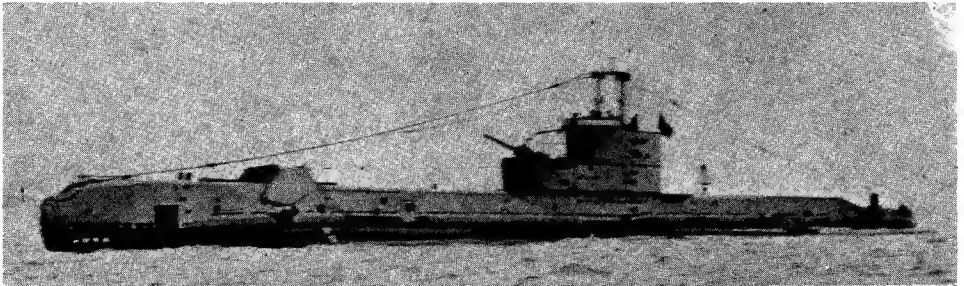
GUNNERY.. The 20 mm Oerlikon anti-aircraft gun and three Vickers gas operated machine guns formerly carried were removed in 1961.

PHOTOGRAPHS.. A port bow view of *Neptuno* at speed appears in the 1957-58 to 1962-63 editions.



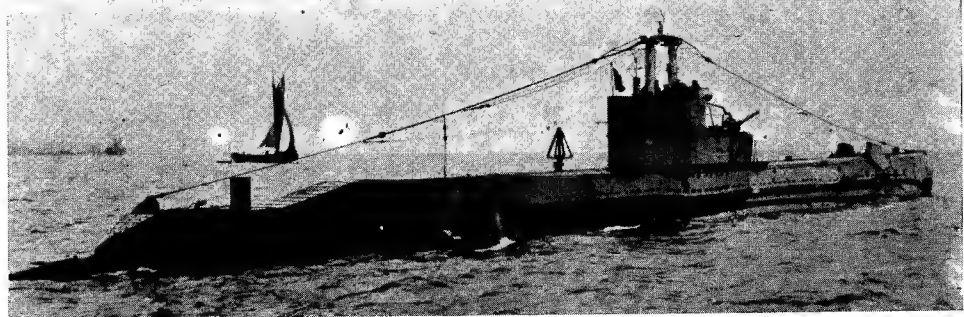
NEPTUNO

1966, Portuguese Navy, Official



NAUTILO

1965, Portuguese Navy, Official



NARVAL

1963, Portuguese Navy, Official

Name	No.	Builders	Laid down	Launch	Completed
NARVAL (ex-HMS <i>Spur</i>)	S 160	Cammell Laird	1 Oct 1943	17 Nov 1944	18 Feb 1945
NAUTILO (ex-HMS <i>Saga</i>)	S 161	Cammell Laird	5 Apr 1944	11 Mar 1945	14 June 1945
NEPTUNO (ex-HMS <i>Spearhead</i>)	S 162	Cammell Laird	18 Aug 1943	2 Oct 1944	21 Dec 1944

DESTROYER (Contratorpedeiro)

1 "Vouga" Class

	Name	No.	Builders	Launched	Completed
	VOUGA	D 334	Yarrow & Co Ltd, Scotstoun	25 Jan 1933	June 1933
Displacement, tons	1 238 standard; 1 563 full load				
Length, feet (metres)	307 (93.6) pp; 323 (89.5) oa				
Beam, feet (metres)	31 (9.4)				
Draft, feet (metres)	11 (3.4) mean				
Guns, dual purpose	2—4.7 in (120 mm)				
Guns, AA	5—40 mm; 3—20 mm				
A/S	1 "Squid" triple DC mortar				
Torpedo tubes	4—21 in (533 mm) quadrupled				
Mines	Rails, fitted; 20 mines carried				
Boilers	3 Yarrow, 400 psi, 350°C				
Main engines	22 000 shp; 2 Parsons sr geared turbines				
Speed, knots	28 max, 24 sustained				
Radius, miles	3 000 et 11 knots				
Oil fuel (tons)	345				
Complement	114 (7 officers, 107 men)				



Refit during 1946-49 by Yarrow included shortening the after funnel, stepping a new tripod foremast, increase in anti-aircraft armament and installation of sonar equipment and radar. Again refitted in 1957 with modified armament, improved anti-submarine capabilities, and installation of ahead throwing weapons (squid mountings). The side thrown projectors were removed, and only two of the depth charge tracks retained.

VOUGA 1967, Portuguese Navy, Official

GUNNERY. Two of the five 40 mm AA guns are in a twin mounting.

DISPOSALS The unconverted ship of this class, Douro, was discarded in Dec 1959. Of the converted ships, Dão was discarded on 29 Nov 1960, Tejo on 9 Feb 1965, and Lima on 16 Oct 1965.

ENGINEERING. The boilers work at a steam pressure of 400 lb per sq in.

FAST ANTI-SUBMARINE FRIGATE

	Name	No.	Builders	Laid down	Launched	Completed
	PERO ESCOBAR	F 335	Navalmecanica, Castellammare di Stabia, Italy	7 Jan 1955	25 Sep 1955	1 July 1957

Displacement, tons	1 250 standard; 1 600 full load				
Length, feet (metres)	295.2 (90.0) pp; 306.7 (93.5) wl; 321.5 (98.0) oa				
Beam, feet (metres)	35.5 (10.8)				
Draft, feet (metres)	10 (3.0)				
Guns, dual purpose	4—3 in (76 mm) 50 cal.				
A/S	2 "Squid" triple DC mortars				
Torpedo tubes	6 (2 triple) for A/S torpedoes				
Boilers	2 Ansaldo-Foster Wheeler "D", 32 kg/cm², 400°C				
Main engines	2 Ansaldo-Genova sr geared turbines; 24 000 shp; 2 shafts				
Speed, knots	32.6 max				
Radius, miles	2 800 at 13.5 knots				
Oil fuel (tons)	236				
Complement	165 (10 officers, 155 men)				



PERO ESCOBAR 1967, Portuguese Navy, Official

A "light destroyer" or fast anti-submarine escort built to the order of NATO for the Portuguese Navy.

GUNNERY. The armament before modernisation comprised two single 3 inch guns, two 40 mm AA (twin mount), four 20 mm AA (two twin mounts) and three 21 inch torpedo tubes.

PHOTOGRAPHS. A larger starboard broadside view appears in the 1957-58 edition, and another in the 1959-60 and 1960-61 editions.

MODERNISATION. Modernised in 1967-68, the alterations including the fitting of new guns, sonar and anti-submarine torpedo tubes similar to those in the "Almirante Pereira da Silva" class frigates (see below)

FAST FRIGATES (Fragatas)

	Name	No.	Builders	Laid down	Launched	Completed
	COMANDANTE HERMENEGILDO CAPELO	F 481	At et Ch de Nantes	1 Dec 1965	29 Nov 1966	1 Aug 1968
	COMANDANTE JOÃO BELO	F 480	At et Ch de Nantes	1 Apr 1965	23 Mar 1966	1 Dec 1967
	COMANDANTE ROBERTO IVENS	F 482	At et Ch de Nantes	1 Aug 1966	1 Aug 1967	1 Apr 1969
	COMANDANTE SACADURA CABRAL	F 483	At et Ch de Nantes	1 Apr 1967	1 Apr 1968	1 Dec 1969

4 "Comandante" Class

Displacement, tons	1 650 standard; 2 180 full load				
Length, feet (metres)	321.5 (98) pp; 338 (103.0) oa				
Beam, feet (metres)	37.7 (11.5)				
Draft, feet (metres)	12.5 (3.8) mean				
Guns, AA	3—3.9 in (100 mm) singles; 2—40 mm				
A/S	1—12 in (305 mm) quadruple				
Torpedo tubes	6—21.7 in (550 mm) ASM, 2 triple				
Main engines	SEMT-Pielstick diesels 16 200 bhp; 2 shafts				
Speed, knots	25 (26.5 max)				
Radius, miles	4 500 at 15 knots				
Complement	214				

The prefabricated construction of these ships was begun on 1 Oct 1964 at the Ateliers et Chantiers de Nantes, France. They are similar to the French "Commandant Riviere" type except the 30 mm AA guns which will be replaced by 40 mm AA guns

	Name	No.	Builders	Laid down	Launched	Completed
	ALMIRANTE GAGO COUTINHO	F 473	Estaleiros Navais Lisnave, Lisbon	2 Dec 1963	30 Aug 1965	1 Aug 1967
	ALMIRANTE MAGALHÃES CORREIA	F 474	Estaleiros Navais de Viane do Castelo	1 Sep 1963	26 Apr 1965	1 Dec 1967
	ALMIRANTE PEREIRA DA SILVA	F 472	Estaleiros Navais Lisnave, Lisbon	14 June 1962	2 Dec 1963	20 Dec 1966

3 "Almirante" Class

Displacement, tons	1 450 standard; 1 950 full load				
Length, feet (metres)	314.6 (95.9)				
Beam, feet (metres)	37 (11.3)				
Draft, feet (metres)	14 (4.3)				
Guns, dual purpose	4—3 in (76 mm) 50 cal.				
A/S	2 Bofors 4-barrelled mortars; 2 DC throwers				
Torpedo tubes	6 (2 triple) for A/S torpedoes				
Boilers	2 Foster Wheeler, 300 psi, 850°F				
Main engines	De Laval dr geared turbines 20 000 shp; 1 shaft				
Speed, knots	26 designed				
Radius, miles	4 500 at 15 knots				
Oil fuel (tons)	400				
Complement	166 (12 officers, 154 men)				



ALMIRANTE PEREIRA DA SILVA 1967, Portuguese Navy, Official

US "Dealey" type escort ships. Prefabrication of 472, 473 was begun in 1961 at Lisnave (formerly Naval Shipyard, Lisbon) and of 474 in 1962.

Fast Frigates—continued

Name	No.	Builders	Launched	Completed
CORTE REAL (ex-USS McCoy Reynolds, DE 440)	F 334	Federal SB & DD Co, Port Newark	22 Feb 1944	2 May 1944
DIOGO CÃO (ex-USS Formoe, DE 509)	F 333	Federal SB & DD Co, Port Newark	2 Apr 1944	5 Oct 1944

2 "Diogo Cão" Class

Ex-U.S. "John C. Butler" Class

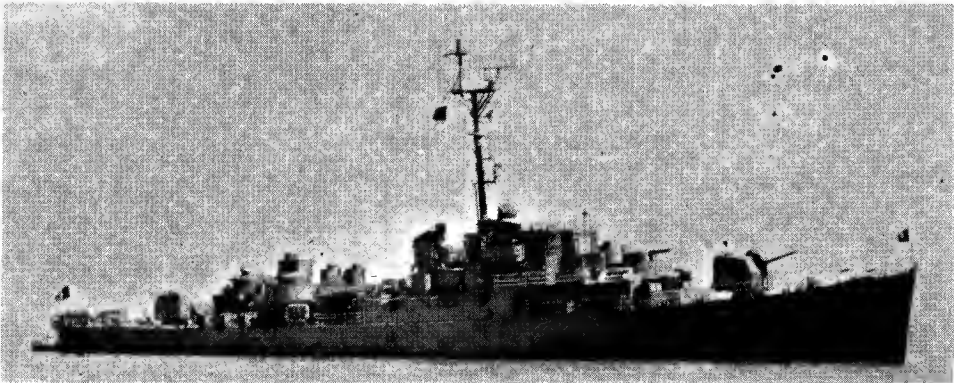
Displacement, tons	1 350 standard; 2 100 full load
Length, feet (metres)	300 (91.4) pp; 306 (93.3) oa
Beam, feet (metres)	36.7 (11.2)
Draft, feet (metres)	14 (4.3) max
Guns, surface	2—5 in (127 mm) 38 cal.
Guns, AA	10—40 mm, 3 twin and 1 quad-ruple
A/S	1 Hedgehog; 8 DCT; 2 DC tracks
Boilers	2 Babcock & Wilcox "D", 410 psi, 750°F
Main engines	2 cross compound WE d.r. geared turbines; 12 000 shp; 2 shafts
Speed, knots	24 max, 21 sustained
Radius, miles	4 000 at 12 knots
Oil fuel (tons)	340
Complement	200 (11 officers, 189 men)

Formerly in the United States Navy, these destroyer escorts or escort ships of the "John C. Butler" class were received from the USA under special agreement and transferred to the Portuguese Navy at San Francisco, California, on 7 Feb 1957 and renamed after Portuguese navigators.

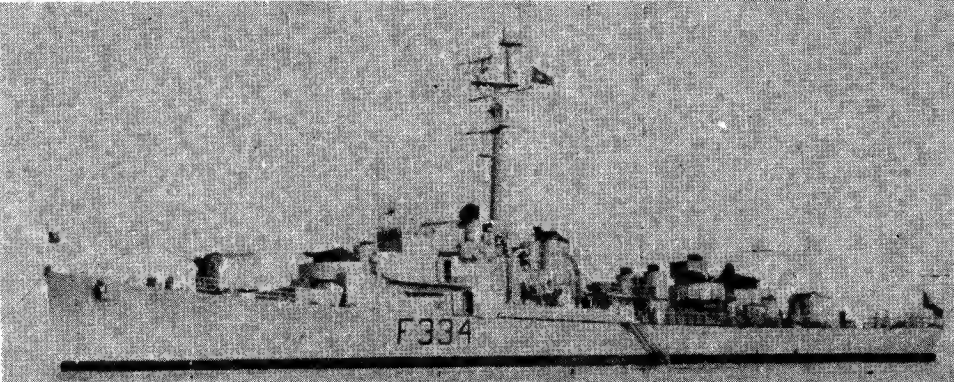
TORPEDO TUBES. The original three 21 inch torpedo tubes in these ships were removed.

NOMENCLATURE. On transfer these ships were originally to have been renamed *Zambeze* and *Zaire*, after rivers in Portuguese Africa, but the names were changed to those of Portuguese navigators as above.

PHOTOGRAPHS. A port bow oblique aerial view of *Diogo Cão* appears in the 1958-59 edition, a starboard quarter oblique aerial view of *Corte Real* in the 1959-60 to 1965-66 editions and a port near broadside surface view of *Diogo Cão* in the 1961-62 to 1965-66 editions.



DIOGO CÃO 1966, Portuguese Navy, Official



CORTE REAL 1966, Portuguese Navy, Official

FRIGATES (Fragatas)

Name	No.	Builders	Laid down	Launched	Completed
ALVARES CABRAL (ex-HMS Burghead Bay)	F 336	Charles Hill & Sons Ltd, Bristol	21 Sep 1944	3 Mar 1945	20 Sep 1945
D. FRANCISCO DE ALMEIDA (ex-HMS Morecambe Bay)	F 479	Wm. Pickersgill Ltd, Sunderland T	30 Apr 1944	1 Nov 1944	22 Feb 1949
PACHECO PEREIRA (ex-HMS Bigbury Bay)	F 337	Hall Russell & Co Ltd, Aberdeen	30 May 1944	16 Nov 1944	10 July 1945
VASCO DA GAMA (ex-HMS Mounts Bay)	F 478	Wm. Pickersgill Ltd, Sunderland W	23 Oct 1944	8 June 1945	11 Apr 1949

T=Completed by John I. Thornycroft & Co Ltd, Woolston, Southampton. W=Completed by J. Samuel White & Co Ltd, Cowes, Isle of Wight.

4 "Alvares Cabral" Class

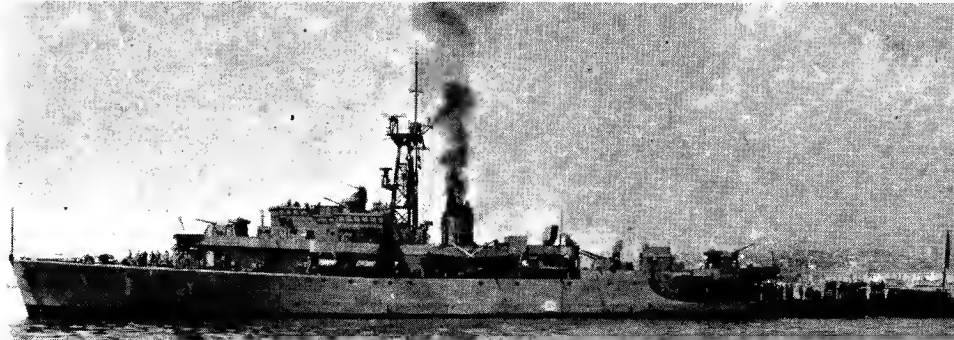
Ex-British "Bay" Class

Displacement, tons	1 600 standard; 2 580 full load
Length, feet (metres)	286 (87.2) pp; 307.5 (93.7) oa
Beam, feet (metres)	38.5 (11.7)
Draft, feet (metres)	15.5 (4.7)
Guns, surface	4—4 in (102 mm)
Guns, AA	6—40 mm
A/S	1 Hedgehog; 4 DCT; 2 DC racks
Boilers	2 Admiralty 3-drum, 225 psi
Main engines	Triple expansion 5 500 ihp; 2 shafts
Speed, knots	19.5
Radius, miles	7 500 at 10 knots
Oil fuel (tons)	680
Complement	16B (11 officers, 157 men)

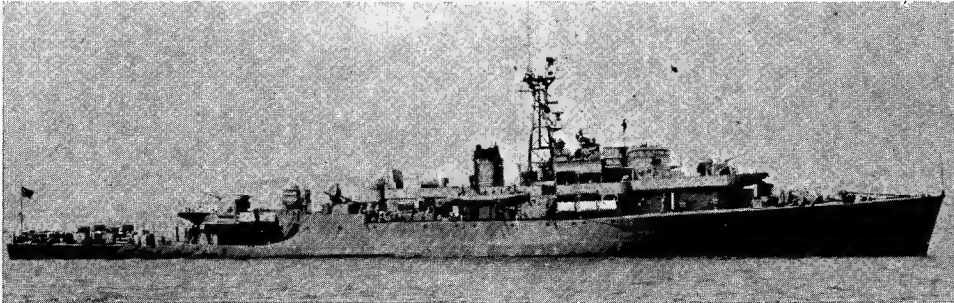
Former British frigates of the "Bay" class, designed primarily for anti-aircraft escort duties.

TRANSFER. *Alvares Cabral* and *Pacheco Pereira* were purchased from Great Britain in Apr 1959 and officially transferred to the Portuguese Navy at Plymouth on 11 May 1959. *D. Francisco de Almeida* and *Vasco da Gama* were purchased from Great Britain in May 1961 and modernised before delivery by John I. Thornycroft & Co Ltd, Woolston, Southampton, where they were commissioned in the Portuguese Navy on 3 Aug 1961.

PHOTOGRAPHS. A photograph of *D Francisco de Almeida* appears in the 1963-64 to 1965-66 editions.



ALVARES CABRAL 1966, Portuguese Navy, Official



PACHECO PEREIRA 1964, Portuguese Navy, Official

Frigates—continued

Name	No.
DIOGO GOMES (ex-HMS <i>Awa</i>)	F 331
NUNO TRISTÃO (ex-HMS <i>Avon</i>)	F 332

Builders
Fleming & Ferguson Ltd, Paisley
Charles Hill & Sons, Bristol

Laid down
27 May 1943
8 Jan 1943

Launched
28 Dec 1943
19 June 1943

Completed
21 Apr 1944
18 Sep 1943

2 "Diogo Gomes" Class
Ex-British "River" Class

Displacement, tons	1 460 standard; 2 450 full load
Length, feet (metres)	283 (86.3) pp; 301.5 (91.9) oa
Beam, feet (metres)	36.7 (11.2)
Draft, feet (metres)	12 (3.7); 15 (4.6) max
Guns, surface	2—4 in (102 mm)
Guns, AA	6—40 mm
A/S	2 Squid triple DC mortars; 2 DC racks
Boilers	2 Admiralty 3-drum, 210 psi
Main engines	Triple expansion 5 500 ihp; 2 shafts
Speed, knots	18 max, 16 sustained
Radius, miles	7 000 at 10 knots
Oil fuel (tons)	600
Complement	175 ((11 officers, 164 men)

Purchased from Great Britain in 1948 and transferred to Portugal in May 1949. Refitted in 1959 when the anti-submarine capabilities were improved by the installation of two squid triple-barrelled depth charge mortars, the

NUNO TRISTÃO (Squid in "B" position)

1966, Portuguese Navy, Official

four side thrown depth charge projectors were removed and only two depth charge racks were retained. PHOTOGRAPHS. A port bow view of *Diogo Gomes* appears in the 1958-59 to 1960-61 editions.

Name	No.
S. CRISTOVÃO (ex-Bartolomeu Dias)	A 5208 (ex-F 471)

Builders
R. & W. Hawthorn Leslie & Co Ltd, Hebburn-on Tyne

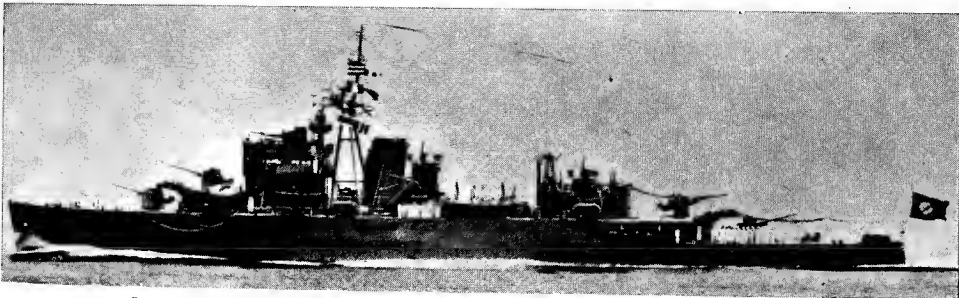
Laid down
24 May 1933

Launched
10 Oct 1934

Completed
May 1935

Displacement, tons	1 788 standard; 2 439 full load
Length, feet (metres)	314 (95.7) pp 334.5 (101.9) wl 338.6 (103.2) oa
Beam, feet (metres)	44.2 (13.5)
Draft, feet (metres)	12.5 (3.8)
Guns, surface	2—4.7 in (120 mm) 50 cal.
Boilers	2 Yarrow, 300 psi
Main engines	2 Parsons sr geared turbines 8 000 shp
Speed, knots	21.8 max
Radius, miles	10 000 at 10 knots
Oil fuel (tons)	580
Complement	71 (6 officers, 65 men)

Formerly designated "Bartolomeu Dias" class and rated as Aviso de Primeira Classe, when she was armed with four 4.7 inch, two 3 inch and eight 20 mm guns, with a capacity of 40 mines, but in Feb 1967 she was converted into a depot ship and rated as Navio Deposito. Sister ship *Afonso de Albuquerque* was lost in action on 18 Dec 1961 during the Indian invasion of Goa.



S. CRISTOVÃO

1964, Captain C. A. Teixeira da Silva, Commanding Officer

DISPOSALS

Of the two frigates of the "Goncalo Velho" class, rated as Second Class Sloops (Avisos de Segundo Classe) *Goncalves Zarco* was officially discarded on 4 Nov 1964, and *Goncalo Velho* was scrapped on 19 June 1961.

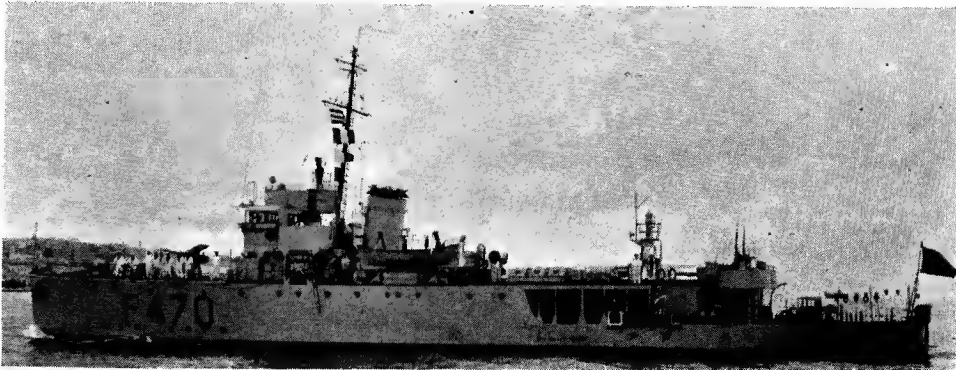
(The frigate *João de Lisboa*, formerly rated as a Second Class Sloop (Aviso de Segunda Classe), was converted in 1961 into a Survey Ship (Navio Hidrografico) like her sister ship *Pedro Nunes*, see next page.

CORVETTE

CACHEU (ex-Comandante Almeida Carvalho, ex-Fort York, ex-Mingon) F-470 (ex-A 527)
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Displacement, tons	672 standard; 900 full load
Length, feet (metres)	171.5 (52.3) pp; 180 (54.9) oa
Beam, feet (metres)	28.5 (8.7)
Draft, feet (metres)	9.5 (2.9) max
Guns, dual purpose	1—3 in (76 mm)
Guns, AA	2—20 mm
Boilers	2 three-drum small tube type
Main engines	Triple expansion 2 400 ihp; 2 shafts
Speed, knots	16
Oil fuel (tons)	160
Complement	83 (8 officers, 75 men)

Former British fleet minesweeper of the "Bangor" class. Originally a sister ship of *Almirante Lacerda*, see next page. Launched in Canada on 24 Aug 1941. Purchased from Great Britain in 1950. Served as a survey ship until 1965 when she was converted into a corvette and her name and number changed from *Comandante Almeida Carvalho*, A 527, to *Cacheu*, F 470.



CACHEU

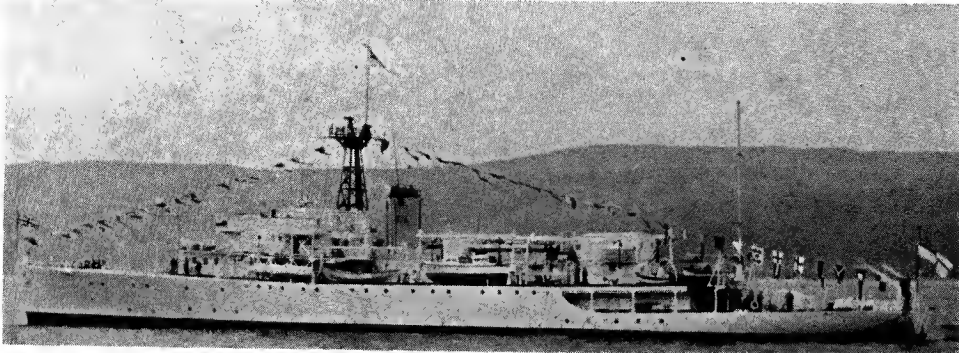
1966, Portuguese Navy, Official

SURVEY SHIPS (Navios Hidrograficos)

AFONSO DE ALBUQUERQUE (ex-HMS <i>Dalrymple</i> , ex-Luce Bay, ex-Loch Glass) A 526

Displacement, tons	1 600 standard; 2 230 full load
Length, feet (metres)	286 (87.2) pp; 307 (93.6) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	14.2 (4.3)
Boilers	2 Admiralty 3-drum
Main engines	4-cylinder triple expansion 5 500 ihp; 2 shafts
Speed, knots	19.5
Radius, miles	5 000 at 10 knots
Oil fuel (tons)	580
Complement	140 (10 officers, 130 men)

Modified frigate of the "Bay" class. Built by Wm. Pickersgill & Sons Ltd, Sunderland, but completed at HM Dockyard, Devonport. Laid down on 29 Apr 1944. launched on 12 Apr 1945, and completed on 10 Feb 1949. Equipped with radar and sonar. Purchased by Portugal from Great Britain in Apr 1966.



AFONSO DE ALBUQUERQUE

1966, Dr Giorgio Arra

The main machinery was manufactured by George Clark Ltd, Sunderland.

Power at 220 volts DC, is from two 120 kw turbo-generators and two 150 kw diesel generators.

Survey Ships—continued

1 "Pedro Nunes" Class (Ex-Sloop)

PEDRO NUNES A 528

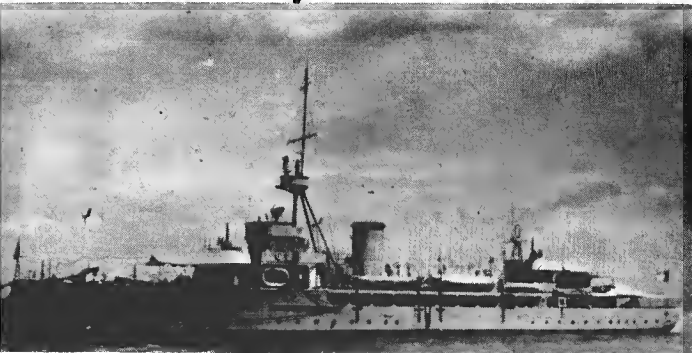
Displacement, tons 1 090 standard; 1 197 full load
Dimensions, feet 223 pp x 32.8 x 9.5
Guns 1—4.7 in, 50 cal; 4—20 mm AA (see *Gunnery*)
Main engines 2 sets MAN 8 cyl diesels; 2 400 bhp = 16.5 knots
Oil fuel, tons 110 normal; 126 max
Radius, miles 6 000 at 13 knots
Complement 51 (7 officers, 44 men)

Built as a second class sloop (aviso de segunda classe) at Lisbon Naval Yerd. Laid down on 5 Nov 1931, launched on 17 Mar 1934 and completed on 11 Apr 1935. Converted into a survey ship (navio hidrografico) in 1956.

GUNNERY. The forward 4.7 inch gun was removed from *Pedro Nunes* in 1956, when she was converted into a survey ship.

DISPOSAL

Sister ship *João de Lisboa* (ex-*Infante D. Henrique*), A 5200, was discarded on 17 Aug 1966.



PEDRO NUNES courtesy Eugenio A. Cavaleiro

1 Ex-British "Flower" Class Frigate

CARVALHO ARAUJO (ex-*Terje Ten*, ex-*Commandant Drogou*, ex-*Chrysanthemum*) A 524

Displacement, tons 1 020 standard; 1 340 full load
Dimensions, feet 190 pp; 205 oa x 33 x 16.5
Guns 1—3 inch, 4—20 mm AA
Main engines Triple expansion; 2 750 ihp = 16 knots
Boilers 2 cylindrical
Oil fuel, tons 288
Complement 48 (7 officers and 41 men)

Former British corvette (later re-rated as a frigate) of the "Flower" class. Built by Harland & Wolff Ltd, Belfast. Laid down on 17 Dec 1940, launched on 11 Apr 1941, and completed on 26 Jan 1942. Served in the French Navy during the Second World War. Sold out of the service after hostilities. Purchased by Portugal from the Hector Whaling Company, at Capetown, in Mar 1959, and later equipped as a survey ship for the Portuguese Navy to replace the former *Corvalho Araújo* (ex-British "Flower" class minesweeping sloop *Jonquil*) which was discarded in 1959.



CARVALHO ARAUJO 1961, Portuguese Navy. Official

1 Ex-British "Bangor" Class Fleet Minesweeper

ALMIRANTE LACERDA (ex-*Caroquet*) A 525

Displacement, tons 672 standard; 900 full load
Dimensions, feet 171.5 pp; 180 oa x 28.5 x 9.5 max
Guns 1—3 in; 2—20 mm AA
Main engines Triple expansion; 2 shafts; 2 400 ihp = 16 knots
Boilers 2, of 3-drum small-tube type
Oil fuel, tons 160
Complement 49 (7 officers, 42 men)

Former British fleet minesweeper of the "Bangor" class, steam type. Built in Canada, launched on 2 June 1941, and purchased from Great Britain in 1946.

Survey Ships—continued



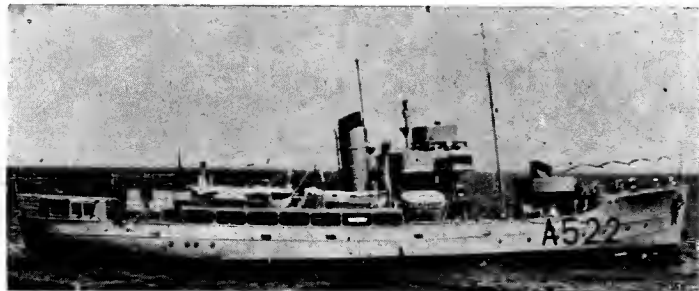
ALMIRANTE LACERDA 1966, Portuguese Navy, Official

1 Ex-British "Isles" Class Minesweeping Trawler

SALVADOR CORREIA (ex-*Baldaque da Silva*, ex-*Rushholm*) A 522

Displacement, tons 560 standard; 740 full load
Dimensions, feet 164 x 27.5 x 15
Guns 2—20 mm AA; DC carried
Main engines Triple expansion; 850 ihp = 12 knots
Complement 54 (4 officers and 50 men)

Former minesweeping trawler. Built by Goole Shipbuilding & Repairing Co Ltd. Laid down on 14 Aug 1941, launched on 4 Feb 1942, and completed on 12 May 1942. Purchased from Great Britain in 1949. Formerly rated as a patrol vessel (Navio Patrulha) and later as a minesweeper (caço-minas). The 3 inch gun was removed in 1964. On 28 Sep 1961 *Baldaque da Silva* exchanged her name with *Salvador Correia* (ex-*Saltarels*) which had been discarded on 12 May 1961.



SALVADOR CORREIA 1964, Portuguese Navy, Official

OCEAN MINESWEEPERS
(*Draga-minas oceânicos*)

4 "S. Jorge" Class

CORVO (ex-USS <i>MSO 487</i>) M 418	PICO (ex-USS <i>MSO 479</i>) M 416
GRACIOSA (ex-USS <i>MSO 486</i>) M 417	S. JORGE (ex-USS <i>MSO 478</i>) M 415
Displacement, tons 665 standard; 750 full load	
Dimensions, feet 165 pp; 172 oa x 35 x 10 mean	
Guns 1—40 mm AA	
Main engines 2 GM diesels; 2 shafts; 1 600 bhp = 13.5 knots max	
Oil fuel, tons 46	
Radius, miles 3 800 at 10 knots (economical speed)	
Complement 69	

"MSO 421" class ocean minesweepers built in the USA under the Mutual Defense Assistance Programme by Burger Boat Co, Manitowoc, Wisconsin and Bellingham Shipyard Co. Constructed of wooden and non-magnetic materials.

PHOTOGRAPHS. Photographs of *S. Jorge* appear in the 1956-57 to 1960-61 editions, and a photograph of *Corvo* in the 1961-62 to 1966-67 editions.

ENGINEERING. The diesels of non-magnetic stainless steel alloy, are model 8-278A, two stroke cycle, non-reversible, 8-cylinder V engines. Controllable pitch propellers are fitted.

Name	Builders	Laid down	Launched	Completed
Corvo	Burger Boat Co	18 Aug 1953	28 July 1954	23 Nov 1955
Graciosa	Burger Boat Co	16 May 1953	19 Nov 1953	15 Aug 1955
Pico	Bellingham SY	1 Oct 1953	18 June 1954	1 June 1955
S. Jorge	Bellingham SY	26 Aug 1953	30 Apr 1954	24 Apr 1955



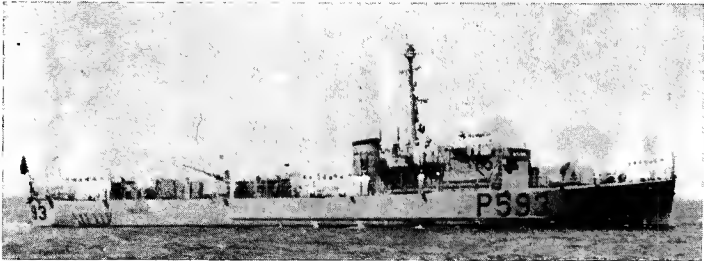
PICO 1967, Portuguese Navy, Official

PATROL VESSELS (Patrulhas)

5 Portuguese Built "Maio" Class

Name	No.	Builders	Launched	Completed
BOAVISTA	P 592	Est Nav do Mondego	10 July 1956	17 May 1957
BRAVA	P 590	Est Nav de Viana do Castelo	2 May 1956	27 Dec 1956
FOGO	P 591	Est Nav de Viana do Castelo	2 May 1956	11 Apr 1957
SANTA LUZIA	P 594	Arsenal do Alfeite	17 Jan 1957	24 Oct 1958
SANTO ANTÃO	P 593	Arsenal do Alfeite	8 June 1956	30 Dec 1957
Displacement, tons	366 standard; 400 full load			
Dimensions, feet	170 pp; 173.8 oa x 23 x 10 mean			
Guns	2—40 mm AA; 2—20 mm AA			
A/S weapons	1 Hedgehog; 4 DCT; 2 depth charge tracks			
Main engines	4 SEMT-Pielstick diesels (4-stroke, 14 cylinder V); 2 shafts; 3 500 bhp = 19 knots			
Oil fuel, tons	45			
Radius, miles	3 900 at 19 knots			
Complement	62 (5 officers, 57 men)			

Built in Portugal under the US off-shore procurement programme. Of all-welded construction. A photograph of *Brava* appears in the 1958-59 to 1962-63 editions.



SANTO ANTÃO 1963, Portuguese Navy, Official

3 French Built "Maio" Class

Name	No.	Builders	Launched
MAIO (ex-Funchal, ex-P 4)	P 587	Dubigeon, Nantes	27 Sep 1954
PORTO SANTO (ex-P 5)	P 588	Normand (Le Havre)	9 Feb 1955
S NICOLAU (ex-P 8)	P 589	Normand (Le Havre)	7 June 1955
Displacement, tons	366 standard; 400 full load		
Dimensions, feet	170 pp; 173.7 oa x 23 x 10		
Guns	2—40 mm AA; 2—20 mm AA		
A/S weapons	1 Hedgehog; 4 DCT; 2 depth charge tracks		
Main engines	4 SEMT-Pielstick diesels; 2 shafts; 3 240 bhp = 17.5 knots		
Radius, miles	4 000 at 10 knots		
Complement	62 (5 officers, 57 men)		

Of PC design, but built in France as a US offshore procurement order under the Mutual Defense Assistance Programme. Fitted with two mine rails.

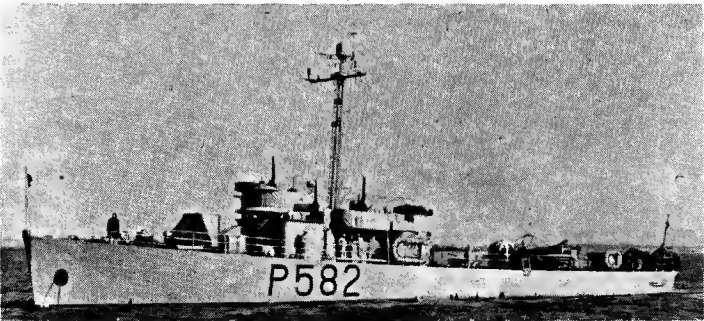


S. NICOLAU 1967, Portuguese Navy, Official

6 "Principe" Class

PRINCIPE (ex-Flores, ex-PC 812)	P 581	SANTIAGO (ex-PC 1257)	P 583
MADEIRA (ex-PC 811)	P 582	S. TOMÉ (ex-PC 1256)	P 585
SAL (ex-PC 809)	P 584	S. VICENTE (ex-PC 1259)	P 586
Displacement, tons	318 standard; 357 full load		
Dimensions, feet	170 wl; 173.7 oa x 23 x 11 max		
Guns	1—40 mm AA; 3—20 mm AA		
A/S weapons	1 Hedgehog; 4 DCT; 2 depth charge tracks		
Main engines	2 Hamilton diesels; 2 shafts; 3 500 bhp = 19 knots		
Complement	62 (5 officers, 57 men)		

Submarine chasers of the PC type purchased from USA in 1948. Named after Portuguese Atlantic Islands. For patrol and Air/Sea Rescue duties in the Azores, Madeira, and off the Portuguese coast. The armament was modified in 1957, anti-submarine weapons being added and the 3 inch guns and two 20 mm guns being removed. A photograph of *Santiago* appears in the 1955-56 to 1959-60 editions, and of *Sal* in the 1960-61 to 1965-66 editions.



MADEIRA 1966, Portuguese Navy, Official

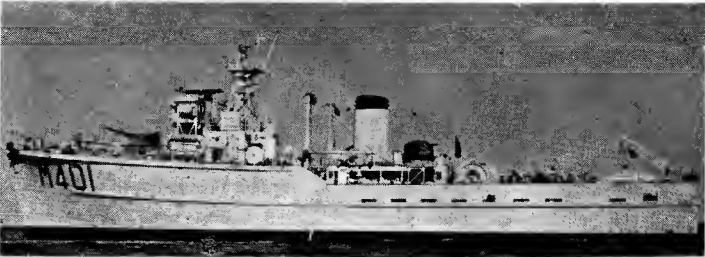
COASTAL MINESWEEPERS

(Draga-Minas Costeiros)

4 "S. Roque" Class (British "Ton" Type)

Name	No.	Launched	Completed
LAGOA	M 403	15 Sep 1955	10 Aug 1956
RIBEIRA GRANDE	M 402	14 Oct 1955	8 Feb 1957
ROSARIO	M 404	29 Nov 1955	8 Feb 1956
S ROQUE	M 401	5 Sep 1955	4 June 1956
Displacement, tons	360 standard; 425 full load		
Dimensions, feet	140 pp; 152 oa x 28.8 x 7		
Guns	1—40 mm AA; 2—20 mm AA (twin mount)		
Main engines	2 Mirrlees diesels; 2 shafts; 2 500 bhp = 15 knots		
Complement	47 (4 officers, 43 men)		

Similar to the British "Ton" class coastal minesweepers, but built in Portugal. 'All laid down at CUF Shipyard, Lisbon, on 7 Sep 1954, under the OSP-MAP. *Lagoa* and *S Roque* were financed by USA and the other two by Portugal. A photograph of *Lagoa* appears in the 1958-59 to 1960-61 editions and of *Ribeira Grande* in the 1961-62 to 1965-66 editions.

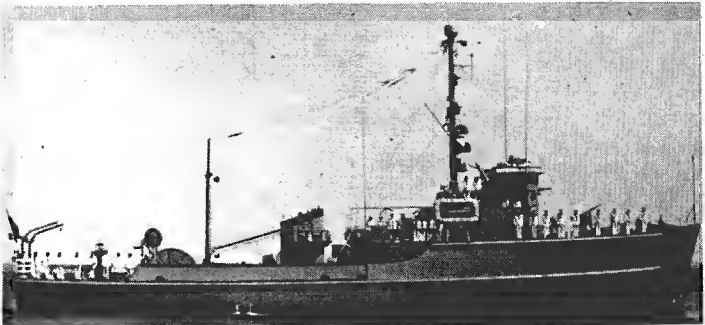


S. ROQUE 1966, Portuguese Navy, Official

8 "Ponta Delgada" Class

ANGRA DO HEROISMO	(ex-AMS 62)	M 407
HORTA	(ex-AMS 61)	M 406
LAJES	(ex-AMS 146)	M 411
PONTA DELGADA	(ex-Adjutant, AMS 60)	M 405
SANTA CRUZ	(ex-AMS 92)	M 409
S. PEDRO	(ex-AMS 147)	M 412
VELAS	(ex-AMS 145)	M 410
VILA DO PORTO	(ex-AMS 91)	M 408
Displacement, tons	375 standard; 405 full load	
Dimensions, feet	138 pp; 144 oa x 27 x 8	
Guns	2—20 mm AA (twin mount)	
Main engines	GM diesels, 900 bhp = 14 knots	
Complement	40 (4 officers, 36 men)	

Of wooden and non-magnetic construction. *Ponta Delgada* was transferred from the US on 7 Apr 1953. Four more were delivered in 1953-54 and the remaining three in 1955. A photograph of *Horta* appears in the 1957-58 to 1960-61 editions and of *S Pedro* in the 1961-62 to 1965-66 editions.



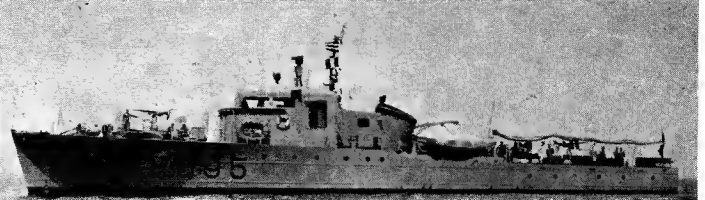
SANTA CRUZ 1966, Portuguese Navy, Official

FISHERY PROTECTION LAUNCHES

5 "Azevia" Class (Lanchas de Fiscalização da Pesca)

AZEVIA P595	BICUDA P596	CORVINA P 597	DOURADA P598
			ESPADILHA P599
Displacement, tons	230; 270 full load		
Dimensions, feet	134.5 pp; 139.8 oa x 21.3 x 7		
Guns	2—20 mm AA		
Main engines	2 7-cyl 2-stroke Sulzer diesels except first pair; 2 10-cyl 4-stroke MAN diesels; 2 shafts; 2 400 bhp = 17 knots		
Oil fuel, tons	25		
Radius, miles	3 700 at 11 knots; 850 at 17 knots		
Complement	30 (2 officers, 28 men)		

All launched in 1941-42. Photograph of *Bicuda* in the 1953-54 to 1959-60 editions.



AZEVIA Portuguese Navy, Official

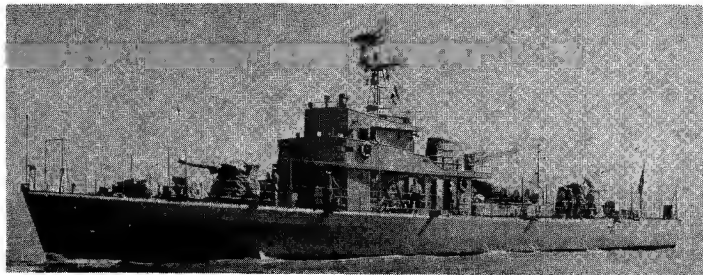
PATROL LAUNCHES (*Lanchas de Fiscalização*)

10 "Argos" Class

ARGOS	P 372	DRAGÃO	P 374	LIRA	P 361
CASSIOPEIA	P 373	ESCORPIÃO	P 375	ORION	P 362
CENTAURO	P 1130	HIDRA	P 376	PEGASO	P 379
				SAGITARIO	P 1134

Displacement, tons 180 standard; 210 full load
 Dimensions, feet 131.2 pp; 136.8 oa x 20.5 x 7
 Guns 2—40 mm AA
 Main engines 2 Maybach diesels; 1 200 bhp = 17 knots
 Oil fuel, tons 16
 Complement 24 (2 officers, 22 men)

Six built by Arsenal do Alfeite, Lisbon, and four by Estaleiros Navais de Viana do Castelo. All completed June 1963 to Sep 1965. Named after constellations. A photograph of *Dragão* appears in the 1964-65 to 1966-67 editions.



ARGOS

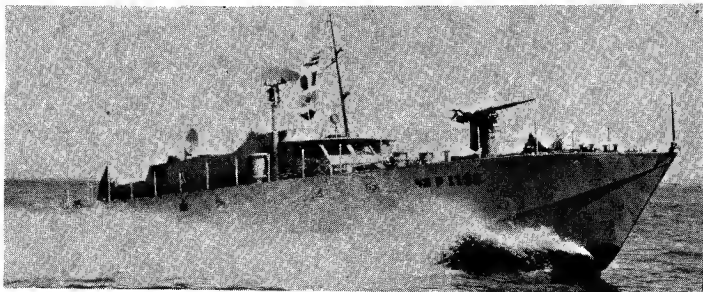
1967, Portuguese Navy, Official

6 "Jupiter" Class

JUPITER	P 1132	MERCURIO	P 1135	URANO	P 1137
MARTE	P 1134	SATURNO	P 1136	VENUS	P 1133

Displacement, tons 32 full load
 Dimensions, feet 69 oa x 16.5 x 4.3
 Guns 1—20 mm Oerlikon AA
 Main engines 2 Cummins diesels; 1 270 bhp = 20 knots
 Complement 8

Built during 1964-65. All commissioned between 10 Mar and 12 Aug 1965.



JUPITER

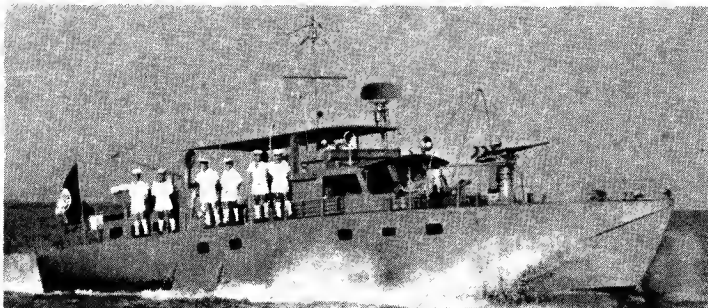
1967, Portuguese Navy, Official

8 "Bellatrix" Class

ALTAIR	P 377	DENEK	P 365	FOMALHAUT	P 367
BELLATRIX	P 363	ESPIGA	P 366	POLLUX	P 368
CANOPUS	P 364			RIGEL	P 378

Displacement, tons 23 light; 29 full load
 Dimensions, feet 62.8 wl; 68 oa x 15.2 x 4
 Guns 1—20 mm Oerlikon AA
 Main engines 2 Cummins diesels; 470 bhp = 15 knots
 Complement 7

Completed in 1961-62 in Germany by Beyerische Schiffbaugesellschaft.



BELLATRIX

1962, Portuguese Navy, Official

ALGOL	P 1138
Displacement, tons	24
Dimensions, feet	50.3 x 13.3 x 2.5
Guns	2 MG
Main engines	2 Cummins diesels; 244 bhp

Built by Argibay, Lisbon in 1964. Crew varies, normally seven.

CASTOR	P 580
Displacement, tons	22
Dimensions, feet	53.5 wl; 58 oa x 13.1 x 3.3
Guns	1—20 mm Oerlikon AA
Main engines	2 Cummins diesels; 500 bhp = 15 knots
Complement	7

Built at the Estaleiros Navais do Mondego and commissioned on 3 Feb 1964.

Patrol Launches—continued

2 "Antares" Class

ANTARES	P 360	REGULUS	P 369
Displacement, tons	18		
Dimensions, feet	56 oa; 51.5 wl x 15.2 x 4 aft		
Guns	1—20 mm Oerlikon quick firing AA		
Main engines	2 Cummins diesels; 2 shafts; 460 bhp = 18.2 knots		
Complement	7		

Antares was built in 1959 by James Taylor (Shipbuilders) Ltd, Shoreham, Sussex, England. Hull of Deborine resinglass fibre moulding. *Regulus* was built in Portugal by Nevalis Shipyard, the hull being imported from England. Completed 27 Jan 1962. Photographs of *Antares* appear in the 1960-61 to 1966-67 editions. Of this class, *Sirius* and *Vega* were lost in action in Dec 1961 during the Indian invasion of Goa.

RIO MINHO	P 370
Displacement, tons	13.5
Dimensions, feet	49.2 x 10.5 x 2.3
Guns	2 MG
Main engines	2 Alfa Romeo engines; 130 bhp = 9 knots
Complement	8

Built at Arsenal do Alfeite in 1955-57 for the River Minho on Spanish border.

TETE	P 371
Displacement, tons	100
Dimensions, feet	76.7 x 20 x 2.2
Guns	2—47 mm; 2 MG
Main engines	Stern-wheel propulsion; 70 hp = 8 knots
Boilers	1 Yarrow

Built by Yarrow & Co Ltd, Scotstoun, Glasgow. Launched in 1918. Re-launched at Chinde in 1920. Employed on Zambesi River. Formerly river gunboat (lança canhoneira) but re-rated patrol boat (lança de fiscalização) with 6 crew in 1960.

MINESWEEPERS (*Caça-Minas*)

FAIAL (ex-Mangrove)	M 391	SANTA MARIA (ex-P 4, ex-Whalsay)	M 392
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Displacement, tons	560 standard; 770 full load
Dimensions, feet	164 x 27.5 x 15
Guns	1—3 in; 2—20 mm AA; DC carried
Main engines	Triple expansion; 850 ihp = 12 knots
Complement	52 (3 officers and 49 men)

"Isles" class trawlers purchased from Great Britain in 1945 and 1947, and named after islands in the Azores. Originally classified as patrol vessels but later rated as minesweepers. Of four sister ships *Miguel* (ex-Brurey) was discarded in 1956, *Terceira* (ex-Halling) in 1957, *Salvador Correia* (ex-Saltarello) in 1961. *Balduque da Silva* (ex-Ruskholtm) changed her name to *Salvador Correia* and was reclassified as a survey ship. A port bow view of *Faial* appears in the 1961-62 to 1965-66 editions.

Name	Builders	Laid down	Launched	Completed
<i>Faial</i>	Ferguson Bros Ltd	18 Aug 1939	15 Feb 1940	23 Apr 1940
<i>Santa Maria</i>	Cook, Welton & Gemmell	19 Dec 1941	4 Apr 1942	4 Sep 1942



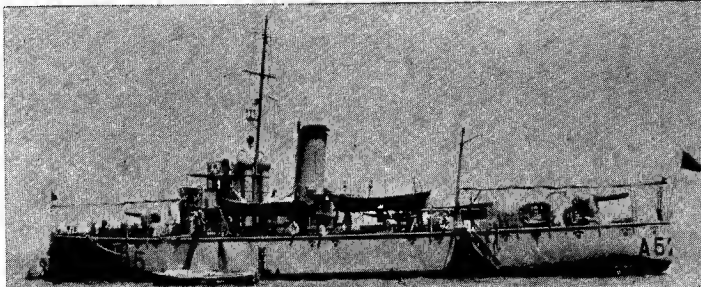
SANTA MARIA

1966, Portuguese Navy, Official

GUNBOAT (*Canhoneira*)

DIO	A 5205
Displacement, tons	397 standard; 492 full load
Dimensions, feet	147.7 x 27.2 x 7
Guns	2—3 in, 40 cal (Armstrong); 2—47 mm
Main engines	Triple expansion; 2 shafts; 700 hp = 13 knots
Boilers	Yarrow (fired by coal, 85 tons)
Complement	58 (5 officers, 53 men)

Built at Lisbon Dockyard. Launched in Oct 1929. Used as reserve training ship.



DIO

1964, Portuguese Navy, Official

RUMANIA

Diplomatic Representation

Naval, Military and Air Attaché in London:
Colonel George I. Popa

Naval, Military and Air Attaché in Washington:
Colonel Nicolae Gheorghe Plesă

Strength of the Fleet

4 Medium Escorts, 4 Fleet Minesweepers,
3 Patrol Vessels, 2 Missile Patrol Boats,
8 Motor Torpedo Boats, 22 Inshore Mine-
sweepers, 30 Auxiliaries, etc.

Personnel

Limited to 5,000 officers and ratings

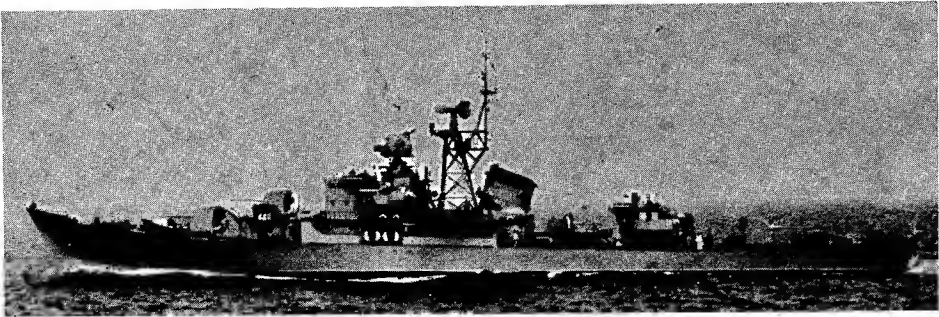
Mercantile Marine

Lloyd's Register of shipping:
39 vessels of 156,392 tons gross

MEDIUM ESCORTS

4 Ex-U.S.S.R. "Riga" Class

Displacement, tons	950 standard; 1 350 full load
Length, feet (metres)	278.8 (85.0)
Beam, feet (metres)	29.5 (9.0)
Draught, feet (metres)	10 (3.0)
Guns, dual purpose	3—3.9 in (100 mm)
Guns, AA	8—37 mm
A/S	4 DCT
Mines	50
Boilers	2
Main engines	Geared turbines
	24 000 shp; 2 shafts
Speed, knots	28
Oil fuel (tons)	300
Complement	190



RIGA Class

1958, Official

Former Soviet escort vessels of the "Riga" class built in 1955 and taken over by Rumania in 1957-58. Once reported to number six units, but two were never more than on a mission to the Rumanian Navy, and four are reported now in service.

DISPOSALS

The eight former Soviet submarines of the improved "Shch" or "Q" class; the Rumanian built submarines *Requinul* (S 1) and *Marsuinul* (S 2); and the four former Soviet coastal submarines of the "M V" Type, were all deleted from the list in 1967. Most were over age and obsolescent and have been discarded. Some were returned to the USSR. If any units remain they can be of little further military value, and if used at all can only be pontoon hulks.

The very old destroyers D 9 (ex-D 21, ex-*Letuchi*, ex-*Regina Maria*) and D 10 (ex-D 22, ex-*Likhol*, ex-*Regele Ferdinand*), over age and obsolescent, were also deleted from the list in 1967, having been discarded for disposal.

It is reported that the well over-age and obsolete destroyers *Marasti* (ex-Italian *Sparvieto*) and *Marasesti* (ex-Italian *Nibbio*) have been discarded. One is said to have been scrapped at Constanta and the other is no more than a hulk.

The old minelayer *Amiral Murgescu*, latterly used as a training ship for midshipmen or naval cadets, was deleted from the list in 1957. She is reported to have been worn out and not worth the expense of refitting her.

The old light cruiser *Kertch* (ex-*Stalingrad*, ex-Z 15, ex-*Emanuele Filiberto Duca D'Aosta*) was reported to have been lent or leased by USSR to the Rumanian Navy. But in 1961 it was reported that she was being scrapped. See USSR section, 1959-60 edition.

MISSILE PATROL BOATS

2 Ex-U.S.S.R. "Komar" Class

Displacement, tons	75 standard; 100 full load
Dimensions, feet	88 aa x 21 x 6
Missile launchers	2 for guided weapons of 15 miles range
Guns, AA	2—25 mm (1 twin forward)
Main engines	3 diesels; 4 800 bhp = 40 knots

A new type of craft developed from "P 6" class motor torpedo boats/motor gunboats. Built in 1960-61. Fitted with two surface-to-surface launchers aft in hooded casings, nearly 45 degrees angle off the deck level.

MOTOR TORPEDO BOATS

8 Ex-U.S.S.R. "P 4" Class

Displacement, tons	50
Dimensions, feet	85.3 x 20 x 6
Guns	4—25 mm AA
Tubes	2—21 in
Main engines	Speed = 42 knots

Former Soviet motor torpedo boats transferred to Rumania from the USSR.

PATROL VESSELS

3 Ex-U.S.S.R. "Kronstadt" Class

Displacement, tons	300 standard; 350 full load
Dimensions, feet	167.3 x 19.3 x 9
Guns	1—3.4 in dual purpose forward; 2—37 mm AA single aft; 6—12.7 mm in twin mounts
A/S weapons	2 ahead throwing launchers; 2 side projectors; 2 depth charge tracks
Main engines	Diesels; 2 shafts; speed = 27 knots

Former Soviet submarine chasers transferred to Rumania from the USSR.

DISPOSALS

The two old patrol vessels rated as gunboats (canoniere), namely *Locotenent-Comandor Stiki Eugen* (ex-French *Friponne*) and *Sublocotenent Ghiculescu* (ex-French *Mignonne*), were deleted due to being over age and obsolete (see photograph and full particulars in the 1961-62 and earlier editions).

The two very old patrol boats, former Austrian torpedo boats (torpiloare), namely *Sborul* (ex-T 81) and *Smeul* (ex-T 83), considered to be of no further military value, were discarded and, it is reported, are to be scrapped (see full particulars in the 1961-62 and earlier editions and photograph in the 1960-61 and earlier editions).

Some of the old river monitors *Ardeal*, *Basarabia*, *Bratianu*, *Bucovina* and *Lahogari*, and the old river gunboats *Closca*, *Cusan* and *Horia*, are reported to still exist.

INSHORE MINESWEEPERS

22 Ex-U.S.S.R. "T 301" Class

Displacement, tons	130
Dimensions, feet	100 x 16 x 4.5
Guns	2—45 mm AA; 4—12.7 mm MG
Main engines	Diesel; 480 bhp = 10 knots
Complement	30

Former Soviet coastal Minesweepers transferred to Rumania by the USSR in 1956-60.

There are some launches on the Danube and some patrol boats in the Black Sea. Reports mention two surveying vessels, three landing ships (one LST and two LSM), ten landing craft (2 LCI and 8 LCT), ten transports and three oilers.

MAINTENANCE VESSEL

Former Submarine Depot Ship

CONSTANTA

Displacement, tons	1 329 standard; 2 300 full load
Dimensions, feet	255.8 x 37 x 13.2
Guns	2—4 in; 2—40 mm
Main engines	2 sets Diesels; 2 shafts; 1 000 bhp = 13 knots
Radius, miles	12 000

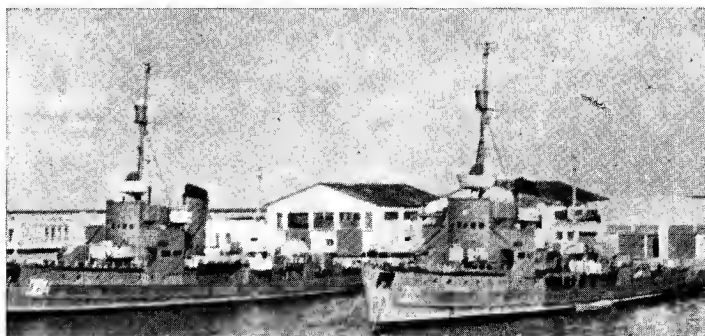
Built by Quarnaro Yard, Fiume. Laid down on 15 Aug 1927. Launched on 8 Nov 1928. Completed in 1931. Former submarine depot ship. Fitted with engineering, and torpedo shops; torpedo loading room; salvage, diving and submarine signalling apparatus. Latterly used as a training ship. May be discarded in the near future. A photograph appears in the 1960-61 and earlier editions.

MINESWEEPERS

4 Ex-German "M 40" Type

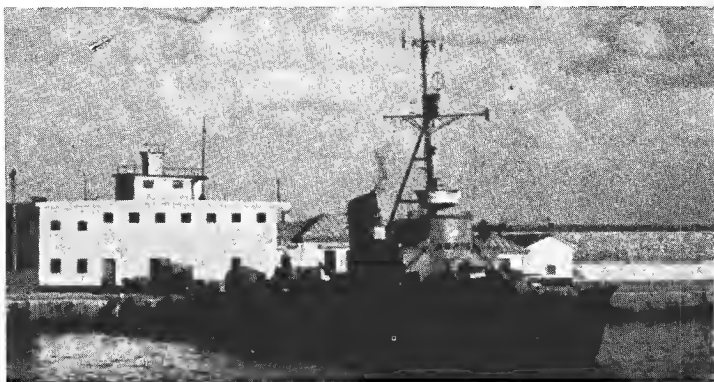
DESCATUSARIA	DESROBIERA	DEMOCRATIA	DREPTATEA
Displacement, tons	543 standard; 775 full load		
Dimensions, feet	188 pp; 203.5 oa × 28 × 7.5 (max)		
Guns	6—37 mm AA (twin)		
A/S weapons	2 DCT		
Main engines	Triple expansion; 2 shafts; 2 400 ihp = 17 knots		
Boilers	2 three-drum water tube		
Fuel, tons	152 coal		
Radius, miles	4 000 at 10 knots		
Complement	80		

Former German "M 40" type coal-burning minesweepers. Built in 1943. Taken over by USSR at the end of the Second World War. Transferred to Rumania in 1956-1957. The number of these vessels reported to have been acquired varies from four to fourteen, but photographs of only D 814, D 815 and D 816 (see below) have reached this annual.



D B14 and D B15

1964, courtesy Mr P. H. Silverstone



D B16

1960, courtesy Mr. P. H. Silverstone

TRAINING SHIPS (Navă Școală)

MIRCEA	
Displacement, tons	1 604
Dimensions, feet	239.5 oa; 267.3 (with bowsprit) × 39.3 × 16.5
Sail area	18 830 sq ft
Main engines	Auxiliary MAN; 6-cylinder Diesel; 500 bhp = 9.5 knots
Complement	83 + 140 midshipmen for training

Built by Blohm & Voss, Hamburg. Laid down on 30 Apr 1938. Launched on 22 Sep 1938. Completed on 29 Mar 1939 (delivered). Sail training ship.

LIBERATEA (ex-Luceafarul, ex-Nahlin)	
Displacement, tons	2 050
Dimensions, feet	250 wl; 296 oa × 36 × —
Main engines	4 Brown-Curtis geared turbines; 2 shafts; 4 000 shp = 17.5 knots
Boilers	2 Yarrow. Oil fuel

Former Royal Yacht. Designed by G. L. Watson & Co. Built by John Brown & Co Ltd, Clydebank, Scotland. Launched in 1930. Purchased in 1937.

RASARITUL (ex-Taifun)	
Measurement, tons	34 (Thames measurement)
Dimensions, feet	54 × 12.5 × 3
Main engines	2 petrol motors; 2 shafts.

Built by J. Samuel White & Co Ltd, Cowes, Isle of Wight, England. Launched in 1938. Of wooden construction. Yacht used as sail training ship.

SAUDI ARABIA

PATROL BOAT

RIYADH	
Displacement, tons	102
Length, feet	95
Guns	1—40 mm AA
Speed	21 knots

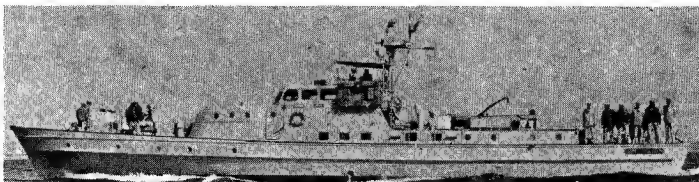
Steel-hulled patrol boat of United States Coast Guard design transferred to Saudi Arabia in 1960. A US Navy "Auk" class minesweeper is not now to be transferred to the Saudi Arabian Navy. 15 patrol boats with diesels are reported ordered from Whittingham & Mitchel, Chertsey, England.

SENEGAL

PATROL BOATS

CASAMANCE (ex-VC 5, P 755)	
SINE-SALOUM (ex-Reine N'Galifourou, ex-VC 4, P 754)	
Displacement, tons	75 standard; 82 full load
Dimensions, feet	104.5 × 15.5 × 5.5
Guns	2—20 mm AA
Main engines	2 Mercedes-Benz diesels; 2 shafts; 2 700 bhp = 28 knots max

Former French patrol craft (Vedettes de Surveillance Côtière). Built by the Constructions Mécaniques de Normandie, Cherbourg. Completed in 1958. *Casamance* was transferred from France to Senegal in 1963. *Sine-Saloum* was given to Senegal on 24 Aug 1965 after having been returned to France by the Congo in Feb 1965.

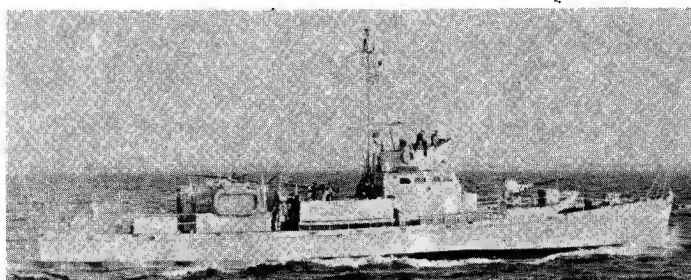


SINE-SALOUM

1967, Senegalese Navy, Official

SÉNÉGAL (ex-P 700, ex-CH 62, ex-US SC 1344)	
Displacement, tons	110 standard; 138 full load
Dimensions, feet	107.5 wl; 110.9 × 17 × 6.5
Guns	1—40 mm AA; 3—20 mm AA
Main engines	2 GM diesels; 2 shafts; 1 000 bhp = 13 knots max
Complement	25

Former US submarine chaser transferred to France on 19 Nov 1943, and from France to Senegal on 12 July 1961. First ship of Senegalese naval force.



SENEGAL

1967, Senegalese Navy, Official

SIERRA LEONE

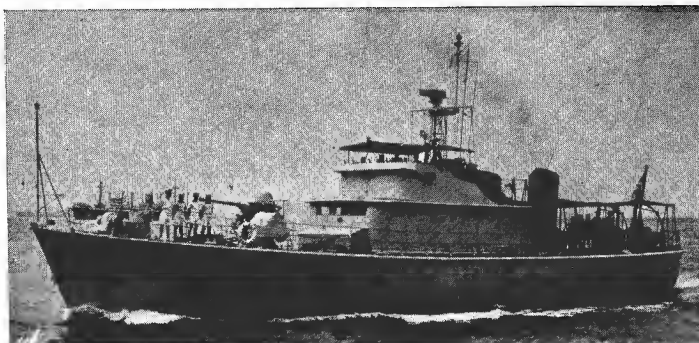
The Sierra Leone Naval Volunteer Force is reported to have several small craft in use. (Sierra Leone became independent on 27 Apr 1961).

SINGAPORE

SEAWARD DEFENCE BOAT

PANGLIMA P 48	
Displacement, tons	119 standard; 131 full load
Dimensions, feet	117 oa × 20 × 6
Guns	1—40 mm, 60 cal forward
Main engines	Paxman YHAXM supercharged B 12 diesels = 14 knots
Oil fuel, tons	15
Complement	15 officers and men

Built by United Engineers, Singapore. Laid down in 1954. Launched on 14 Jan 1956. Accepted by the Singapore Government in May 1956. Her dimensions and layout are reminiscent of those of the British seaward defence boats of the "Ford" class. Transferred to the Royal Malaysian Navy on the formation of Malaysia. Training Tender for RMNVR but from 1965 in full commission with the RMN. Transferred to the Singapore Government (Independent Republic of Singapore) in 1967.



PANGLIMA

1964, Royal Malaysian Navy, Official

SOMALIA

Somalia became an independent republic on 1 July 1960.

Patrol Boats 2 Ex-U.S.S.R. "Poluchati I" Class

Reported to have been transferred from the USSR in 1966-67.

SOUTH ARABIA

The British inshore minesweepers *Bodenham*, *Blunham* and *Elsenham* are being transferred to the South Arabian Navy which is being established by the Federal Government.

SOUTH AFRICA

Administration

Naval Chief of Staff:
Vice Admiral H. H. Biermann, SSA, OBE, SAN

Naval, Military and Air Attaché in London:
Brigadier S. P. Palmer, SM, DFC, SAAF

Assistant Naval Attaché in London:
Commander E. M. Kramer, SAN

Naval, Military and Air Attaché in Washington:
Brigadier Raymond F. Armstrong, SM

Strength of the Fleet

- 2 Destroyers (Helicopter Carrying)
- 6 Anti-Submarine Frigates
- 1 Escort Minesweeper (Training)
- 10 Coastal Minesweepers (Non-Magnetic)
- 10 Seaward Defence Craft
- 4 Support Ships and Auxiliaries

Personnel

1967: 360 officers and 2,700 ratings

Naval Base

HM Dockyard at Simonstown was transferred to the Union of South Africa on 2 Apr 1957.

New Construction Programme

- 3 Submarines (French "Daphne" Class) ordered in Apr 1967

Mercantile Marine

Lloyd's Register of Shipping: 217 vessels of 398,664 tons gross

DESTROYERS

Name	No.	Builders	Laid down	Launched	Completed
JAN VAN RIEBEECK (ex-HMS Wessex, ex-Zenith)	D 278	Fairfield SB & Eng Co Ltd, Govan, Glasgow	20 Oct 1942	2 Sep 1943	11 May 1944
SIMON VAN DER STEL (ex-HMS Whelp)	D 237	R. & W. Hawthorn Leslie & Co Ltd	1 May 1942	3 June 1943	25 Apr 1944

2 Former British "W" Class

Displacement, tons 2 105 standard; 2 750 full load
Length, feet (metres) 339 5 (103 6) pp, 362 8 (110 6) oa
Beam, feet (metres) 35 7 (10 9)
Draught, feet (metres) 17 (5 2) max (props)
Aircraft 2 Westland Wasp helicopters
Guns, surface 4—4 in (102 mm) (two twin)
Guns, AA 4—40 mm (single)
Guns, saluting 4—3 pdr.
Torpedo tubes 4—21 in (quadruple)
A/S 2 DCT; 2 DC racks
Boilers 2 Admiralty 3-drum, 300 psi; 670°F
Main engines 2 Parsons sr geared turbines
40 000 shp; 2 shafts
Speed, knots 36 75 designed; 31·25 sea speed
Radius, miles, 3 262 at 14 knots
Oil fuel, tons 579 (95%)
Complement 192 (11 officers, 181 men)



JAN VAN RIEBEECK (after modernisation)

1967, South African Navy, Official

GUNNERY. Main armament formerly comprised 4—4·7 inch guns.

MODERNISATION. Simon van der Stel was modernised in 1962-64 and Jan van Riebeeck in 1964-66.

PHOTOGRAPHS. A photograph of Simon van der Stel appears in the 1964-65 to 1966-67 editions.

ANTI-SUBMARINE FRIGATES

3 "President" Class. Type 12

Displacement, tons 2 144 standard; 2 557 full load
Length, feet (metres) 360 (109 7) wl; 370 (112 8) oa
Beam, feet (metres) 41 (12 5)
Draught, feet (metres) 17 (5 2) max (props)
Guns, surface 2—4 5 in (115 mm), twin
Guns, AA 2—40 mm Bofors
Guns, saluting 4—3 pdr.
A/S 2 Limbo 3-barrel DC mortars
Boilers 2 Babcock & Wilcox, 550 psi, 850°F
Main engines 2 sets double reduction geared turbines; 30 000 shp; 2 shafts
Speed, knots over 30 max, 28 sustained
Radius, miles 4 500 at 15 knots
Oil fuel, tons 431
Complement 203 (13 officers, 190 men)

Name	No.	Builders	Laid down	Launched	Completed
PRESIDENT KRUGER	F 150	Yarrow & Co, Scotstoun	6 Apr 1959	20 Oct 1960	1 Oct 1962
PRESIDENT PRETORIUS	F 145	Yarrow & Co, Scotstoun	21 Nov 1960	28 Sep 1962	4 Mar 1964
PRESIDENT STEYN	F 147	Alex Stephen & Sons, Govan	20 May 1960	23 Nov 1961	25 Apr 1963



PRESIDENT PRETORIUS

1967

Anti-submarine frigates of the "Whitby" type built in the United Kingdom during the period 1958-64 as a part of the expansion programme announced by the Minister of Defence. President Kruger arrived in South Africa on 27 Mar 1963.

GUNNERY. The two 40 mm AA guns are on the main deck, a deck lower than in the "Whitby" class in the Royal Navy.

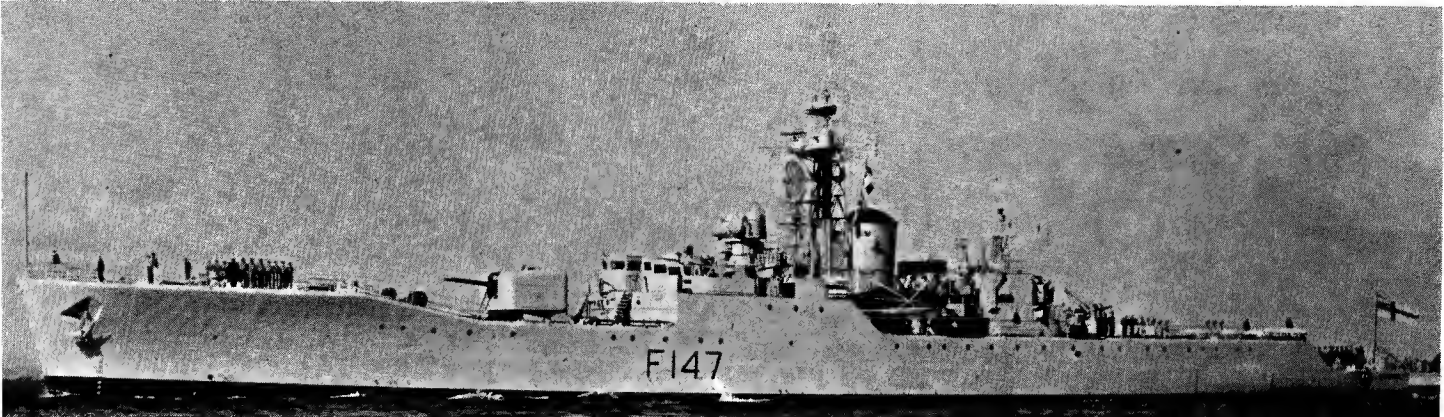
ENGINEERING. The propelling machinery includes geared turbines of advanced design and high power which start on a cruising turbine and automatically switch over to the main turbine as a predetermined speed.

ELECTRICAL. The electrical system is alternating current, 440 volts, three phase, 60 cycles per second.

DESIGN. Primarily designed for the location of modern submarines, these first-rate frigates are fitted with the latest underwater detection equipment and anti-submarine weapons of post-war development. Good seakeeping qualities enable them to maintain their high speed in rough seas. They are all welded and the structural arrangements were specially designed to save as much weight as possible. Air conditioned for tropical climates.

NOMENCLATURE. Kruger was the last President of the old Transvaal Republic. Steyn was the last president of the old Orange Free State. Pretorius was the first president of the Transvaal Republic: he built and named the capital Pretoria after his father, one of the "Great Trek" leaders.

PHOTOGRAPHS. A photograph of President Kruger appears in the 1963-64 to 1965-66 editions.



PRESIDENT STEYN

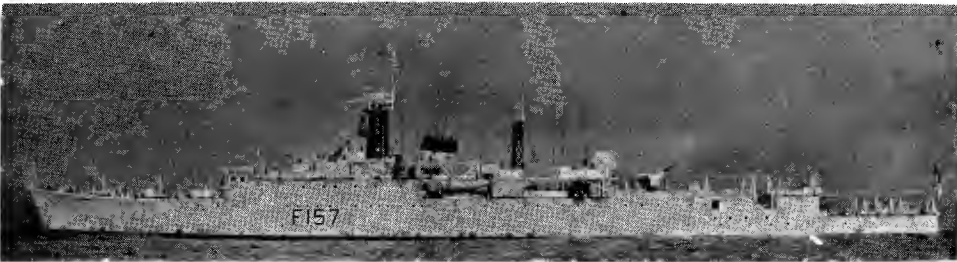
1966, South African Navy, Official

FAST ANTI-SUBMARINE FRIGATES (Ex-Destroyer)

Name (ex-HMS Wrangler)	No. F 157	Builders Vickers-Armstrongs, Ltd, Barrow-in-Furness	Laid down 23 Sep 1942	Launched 30 Dec 1943	Completed 14 July 1944
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1 Former British Type 15

Displacement, tons	2 160 standard; 2 710 full load
Length, feet (metres)	339.5 (103.6) pp; 362.8 (110.6) oa
Beam, feet (metres)	35.7 (10.9)
Draught, feet (metres)	17 (5.2) max props
Guns, surface	2—4 in (102 mm)
Guns, AA	2—40 mm Bofors
Guns, saluting	4—3 pdr.
A/S	2 Squid triple DC mortars
Boilers	2 Admiralty 3-drum; 300 psi; 675°F
Main engines	Parsons single reduction geared turbines; 40 000 shp; 2 shafts
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	3 200 at 14 knots
Oil fuel, tons	505
Complement	195 (13 officers, 182 men)



VRYSTAAT

1966, South African Navy, Official

Fully converted into a Type 15 fast anti-submarine frigate from a fleet destroyer of the "W" class in 1951-52 by Harland & Wolff Ltd, Belfast. Refitted by the Mount

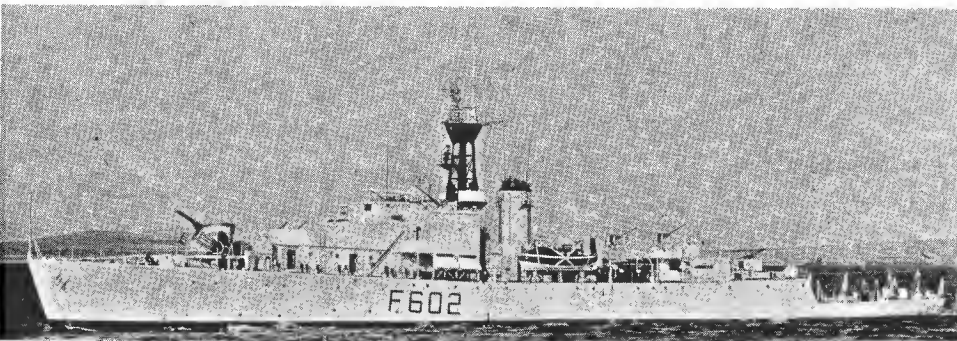
Stuart Dry Dock Ltd, Cardiff, and taken over from the Royal Navy on 29 Nov 1956 as a unit of the South African Navy and renamed *Vrystaat*. Sailed for South Africa at the end of Jan 1957. CLASS. Originally a sister ship of *Jan van Riebeeck* and *Simon van der Stel* (see previous page).

FRIGATES

Name (ex-HMS Loch Boisdale) (ex-HMS Loch Ard)	No. F 432 F 602	Builders Blyth Dry Docks & SB Co Ltd Harland & Wolff, Ltd, Belfast	Laid down 8 Nov 1943 20 Jan 1944	Launched 5 July 1944 2 Aug 1944	Completed 1 Dec 1944 21 May 1945
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2 Former British "Loch" Class

Displacement, tons	1 610 standard; 2 450 full load
Length, feet (metres)	286 (87.2) pp; 307 (93.6) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	15 (4.6) max
Guns, surface	2—4 in (102 mm)
Guns, AA	<i>Transvaal</i> : 6—40 mm Bofors <i>Good Hope</i> : 2—40 mm Bofors
Guns, saluting	<i>Good Hope</i> : 4—3 pdr.
A/S	2 Squid triple DC mortars
Boilers	2 Admiralty 3-drum; 225 psi
Main engines	2 sets triple expansion 5 500 ihp; 2 shafts
Speed, knots	19.5 max (designed)
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	724
Complement	165 (10 officers, 155 men)



TRANSVAAL

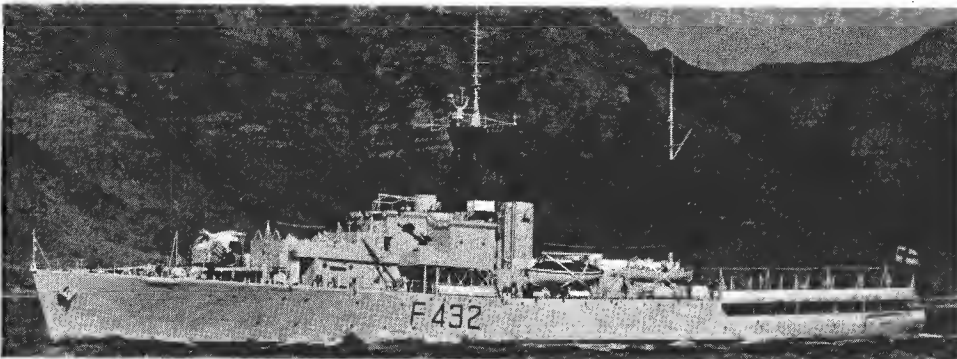
South African Navy, Official

These two "Loch" class anti-submarine frigates, and a sister ship, *Natal*, were presented to South Africa by Great Britain in 1944-45.

CONSTRUCTION. *Transvaal* was completed by Lobnitz & Co Ltd, Renfrew.

MODIFICATION. When *Transvaal* was modernised she had her forecandle deck extended aft to provide extra accommodation (see photograph).

CONVERSIONS. *Good Hope* was converted to a despatch vessel in 1955 as Administrative Flagship of the South African Navy. She has deckhouse superstructure for extra cabins, and reception platform above built on aft, and mainmast. Refitted in 1961. Sister ship *Natal* was converted into a survey ship in 1957, see next page.



GOOD HOPE

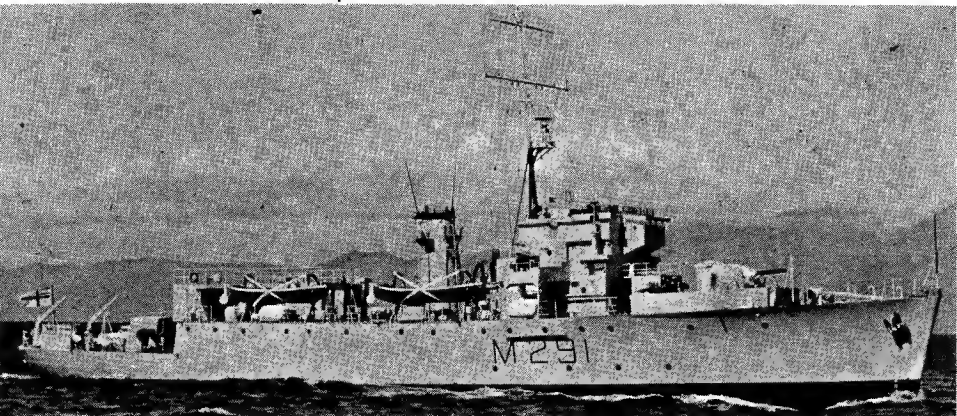
South African Navy, Official

ESCORT MINESWEEPER

Name (ex-HMS Pelorus)	No. M 291	Builders Lobnitz & Co Ltd, Renfrew	Laid down 8 Oct 1942	Launched 18 June 1943	Completed 7 Oct 1943
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1 Former British "Algerine" Class

Displacement, tons	1 040 standard; 1 330 full load
Length, feet (metres)	212.5 (64.8) pp; 225 (68.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	11.5 (3.5)
Guns, surface	2—4 in (102 mm)
Guns, AA	2—40 mm Bofors
A/S	4 DCT
Boilers	2 three-drum type; 250 psi
Main engines	2 sets triple expansion 2 400 ihp; 2 shafts
Speed, knots	16 max, 14 sustained
Radius, miles	5 500 at 10 knots
Oil fuel (tons)	270
Complement	115 (8 officers, 107 men)



PIETERMARITZBURG

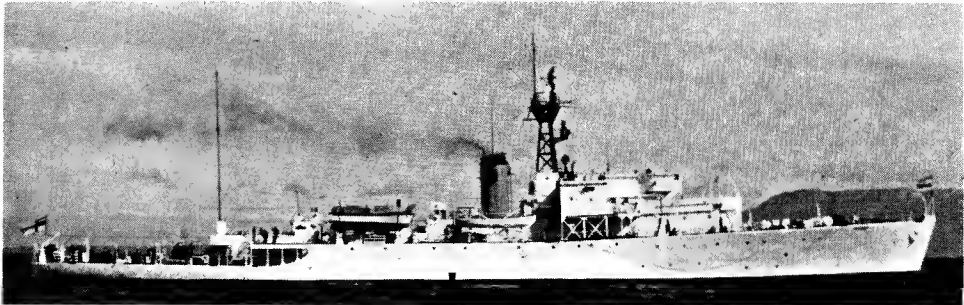
South African Navy, Official

Built as ocean minesweeper, also used as escort vessel. Purchased from Great Britain in 1947. Re-commissioned as midshipmen's training ship on 30 Aug 1962. Sister ship *Bloemfontein* (ex-HMS *Rosamund*) was sold at Simonstown on 16 Mar 1966.

SURVEY SHIP (ex-Frigate)

Name	No	Builders	Laid down	Launched	Completed
NATAL (ex-HMS Loch Cree)	A 301	Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne	18 Oct 1943	19 June 1944	8 Mar 1945
Displacement, tons	1 435 standard; 2 260 full load				
Length, feet (metres)	286 (87.2) pp; 307 (93.6) oa				
Beam, feet (metres)	38.5 (11.7)				
Draught, feet (metres)	12 (3.7) mean; 14.7 (4.5) max				
Boilers	2 Admiralty 3-drum				
Main engines	Triple expansion				
	5 500 ihp; 2 shafts				
Speed, knots	19.5 max (designed)				
Radius, miles	9 500 at 12 knots				
Oil fuel (tons)	724				
Complement	124				

"Loch" class frigate presented by Great Britain in 1945. Converted into a survey ship in 1957, when guns and A/S weapons removed. Sister ship of *Good Hope* and *Transvaal*, see previous page.



NATAL

South African Navy, Official

COASTAL MINESWEEPERS

10 British "Ton" Class (Type 1)

DURBAN	M 1499	MOSSELBAAI (ex-Oakington)	M 1213
EAST LONDON (ex-Chilton)	M 1215	PORT ELIZABETH (Dumbleton)	M 1212
JOHANNESBURG (Castleton)	M 1207	PRETORIA (ex-Dunkerton)	M 1144
KAAPSTAD (ex-Hazleton)	M 1142	WALVISBAAI (ex-Packington)	M 1214
KIMBERLEY (ex-Stratton)	M 1210	WINDHOEK	M 1498
Displacement, tons	360 standard; 425 full load		
Dimensions, feet	140 pp; 152 oa x 28.8 x 8.2		
Guns	1—40 mm 8ofors AA; 2—20 mm AA		
Main engines	Diesels (Mirlees in Kaapstad and Pretoria; 2 500 bhp. Deltic in remainder; 3 000 bhp = 15 knots		
Complement	27		

Kaapstad and *Pretoria*, which have lattice masts and open bridge, were purchased in 1955. *Windhoek*, with frigate bridge and tripod mast, was launched at John I. Thornycroft & Co Ltd, Woolston, Southampton, on 27 June 1957. *Durban*, which has a covered bridge and tripod mast, was launched at Camper & Nicholson's Gosport, on 12 June 1957. *East-London* and *Port Elizabeth* were transferred from the Royal Navy at Hythe, Southampton, on 27 Oct 1958, and sailed for South Africa in Nov 1958. *Johannesburg*, *Kimberley* and *Mosselbaai* were delivered in 1959. *Walvisbaai* was launched by Harland & Wolff, Belfast on 10 Dec 1958 and delivered in 1959. A photograph of *Pretoria* appears in the 1956-57 to 1962-63 editions, of *Windhoek* in the 1958-59 to 1963-64 editions, of *Kimberley* in the 1962-63 to 1966-67 editions.



JOHANNESBURG

1964, South African Navy, Official



WALVISBAAI

1967, Wright & Logan

SEAWARD DEFENCE LAUNCHES

SDML 1197	SDML 1202	SDML 1204
SDML 1200	SDML 1203	
Displacement, tons	46 standard; 54 full load	
Dimensions, feet	72 oa x 15.9 x 5.3	
Main engines	2 Gardner 8-cylinder diesels; 130 bhp = 11 knots	
Complement	11 to 14	

Former HDMLs (Harbour Defence Motor Launches) later designated Seaward Defence Motor Launches. All built in South Africa. Guns were removed. Used as tenders to South African Naval Bases. SDML 1202 was converted to a gunnery practice target. SDML 1330 and 1331 were stricken off in 1953 and SDML 1199 and 1201 in 1955. SDML 1198 was scrapped in 1956 and SDML 1332 on 11 Feb 1958.

FLEET REPLENISHMENT SHIP

TAFELBERG (Table Mountain)
Built as Danish East Asiatic Co.'s tanker *Annam* by Naskovs Skibsvaerf. Launched on 20 June 1958. Purchased by the South African Navy in 1965. 12 500 tons gross, 18 430 tons deadweight. Speed 15.5 knots. Rebuilt by Sarens Shipbuilding and Engineering Co, Durban with extra accommodation (crew as tanker about 40, as naval vessel about 100), air conditioning, re-wiring for additional equipment, new upper RAS (replenishment at sea) deck built to contain gantries, re-fuelling pipes. Provision for helicopters.

SEAWARD DEFENCE BOATS

5 British "Ford" Class

GELDERLAND (ex-HMS <i>Brayford</i>)	NAUTILUS (ex-HMS <i>Glassford</i>)	P 3120
P 3105	OOSTERLAND	P 3127
HAERLEM	RIJGER	P 3125
Displacement, tons	120 standard; 160 full load	
Dimensions, feet	110 wl; 117.2 oa × 20 × 4.5	
Guns	1—40 mm AA	
A/S weapons	2 DCT in <i>Haerlem</i> , <i>Oosterland</i> and <i>Rijger</i>	
Main engines	2 Davey Paxman diesels. Foden engine on centre shaft. 1 100 bhp = 18 knots max; sea speed: 15 knots	
Complement	24	

Gelderland was purchased from Great Britain in 1954, being handed over to the South African Navy at Portsmouth on 30 Aug 1954. They were a new design of naval vessel, their purpose being to detect, locate and destroy submarines, including midget submarines, in the approaches of defended ports. They have modern electronic equipment for armament, and a comprehensive electrical installation. *Gelderland* was built by A. & J. Inglis Ltd, Glasgow. Second ship, *Nautilus*, was purchased in 1955, *Rijger* was launched on 6 Feb 1958, *Haerlem* on 18 June 1958, *Oosterland* on 27 Jan 1959. All three of these later ships, built by Vosper Ltd, Portsmouth, are fitted with roll damping fins developed and manufactured by Vosper. *Haerlem* had a charthouse added aft as an inshore survey boat. A photograph of *Gelderland* appears in the 1955-56 edition, of *Nautilus* in the 1956-57 to 1959-60 edition, and of *Rijger* in the 1964-65 and 1965-66 editions.



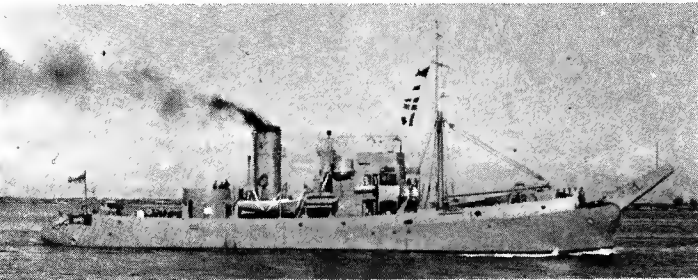
HAERLEM (charthouse added aft)

1966, South African Navy, Official

BOOM DEFENCE VESSEL

SOMERSET (ex-HMS Barcross)	P 285
Displacement, tons	750 standard; 960 full load
Dimensions, feet	150 pp; 182 oa x 32.2 x 11.5
Main engines	Triple expansion; 850 ihp = 11 knots
Boilers	2 SE
Oil fuel, tons	186
Complement	32

Built by Blyth Dry Dock & SB Co Ltd. Laid down on 15 Apr 1941, launched on 21 Oct 1941, completed on 14 Apr 1942. Engine by Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne. "8ar" class. Transferred from Great Britain. Renamed in 1951 after Dick King's horse. Sister ship *Fleur* (ex-HMS Barbrake) P 273 was expended as a target and sunk in False Bay on 8th Oct 1965.



SOMERSET

R. M. Scott

NAVAL TUG

DE NOORDE
Built by Globe Engineering Works Ltd, Cape Town. Completed in Dec 1961. Displacement 170 tons, length 104.5 feet, beam 25 feet. Two Lister 8blackstone engines, twin screw.

Administration

Minister of Marine:
Admiral Excmo Sr Don Pedro Nieto Antunez
Chief of Naval Staff:
Admiral Excmo Sr Don Rafael Fernandez de Bobadilla
Deputy Chief of Naval Staff:
Vice-Admiral Excmo Sr Don Alfredo Lostau Santos
Commander-in-Chief of the Fleet:
Vice-Admiral Excmo Sr Don Miguel A. Garcia Agulio y Aguado

Diplomatic Representation

Naval Attaché in London:
Captain Sr Don Juan Carlos Muñoz-Delgado
Naval Attaché in Washington:
Captain Sr Don Teodoro de Leste Cisneqos

SPAIN

Strength of the Fleet

- 1 Helicopter Carrier
- 8 Submarines (Diesel Powered)
- 1 Heavy Cruiser
- 19 Destroyers (15 Anti-Submarine)
- 8 Frigates
- 6 Frigate Minelayers
- 6 Corvettes
- 13 Fleet Minesweepers
- 12 Coastal Minesweepers
- 16 Patrol Vessels
- 3 Motor Torpedo Boats
- 8 Landing Craft
- 40 Support Ships and Service craft

Building Programme

New construction projected includes 5 frigates of US design and 2 submarines of French design

Personnel

1967: Total 51,200 (4,400 officers, 36,000 ratings, 4,800 civil branch, 6,000 marines)

Navy Estimates

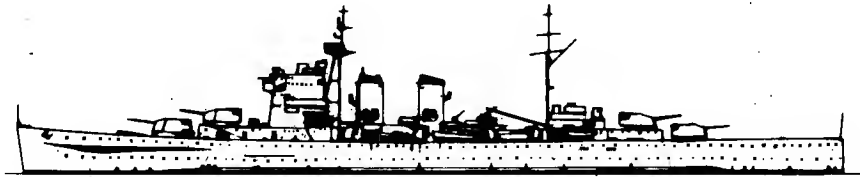
1958:	2,539,719,085.66	pesetas
1959:	2,580,829,918.28	pesetas
1960:	2,655,883,903.00	pesetas
1961:	2,658,479,733.00	pesetas
1962:	3,314,590,252.00	pesetas
1963:	3,559,743,625.00	pesetas
1964:	3,904,880,558.00	pesetas
1965:	4,000,000,000.00	pesetas
1966:	4,500,000,000.00	pesetas
1967:	5,000,000,000.00	pesetas

Mercantile Marine

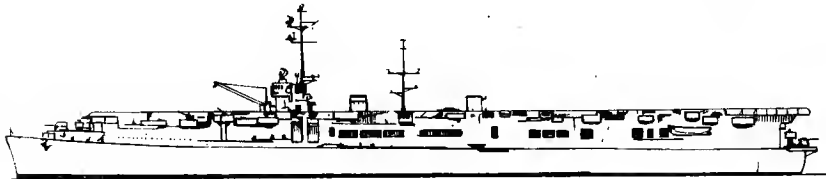
Lloyd's Register of Shipping:
1,905 vessels of 2,241,590 tons gross

Silhouettes

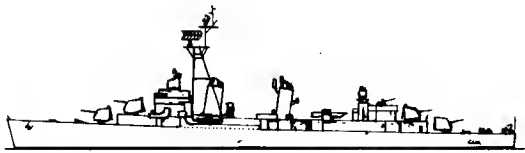
Scale 150 feet = 1 inch



CANARIAS



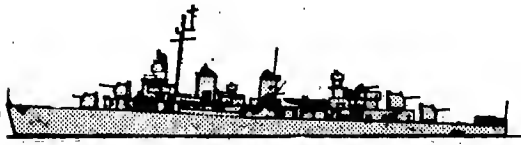
DÉDALO



ALCALA GALIANO, JORGE JUAN



ALMIRANTE FERRANDIZ



ALMIRANTE VALDES



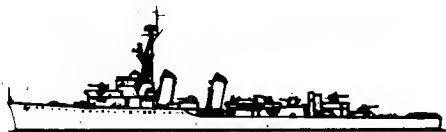
LEPANTO



AUDAZ Class



EOLO, TRITON



ALAVA, LINIERS



PIZARRO Class



MARTE, NEPTUNO



ALMIRANTE ANTEQUERA Class



LEGAZPI, VICENTE YANEZ PINZÓN



DESCUBIERIA



OQUENDO



JUPITER, VULCANO



ATREVIDA Class

SUBMARINES

2 New Construction
French "Daphne" Type

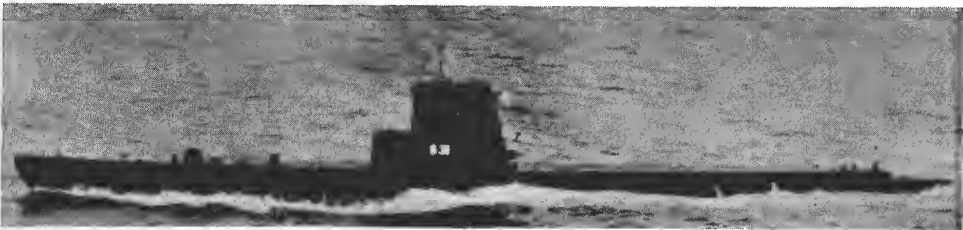
Displacement, tons 850 surface; 1 040 submerged
Dimensions 190.2 x 22.2 x 15.5 feet
Tubes 2—21.7 in (8 bow, 4 stern)

Two submarines basically similar to the French "Daphne" class are to be built by France for Spain in Spanish Yards.

Name	No.	Builders	Launched	Completed
ALMIRANTE GARCIA DE LOS REYES E 1 (ex-USS Kraken, SS 370)	S 31	Manitowoc SB Co	30 Apr 1944	8 Sep 1944
1 Ex-U.S. "Balao" Type				

Displacement, tons 1 526 standard; 1 880 surface;
2 059 submerged
Length, feet (metres) 306.2 (93.3)
Beam, feet (metres) 27 (8.2)
Draught, feet (metres) 17 (5.2)
Torpedo tubes 10—21 in (533 mm)
Main engines 4 diesels, total 6 400 bhp
Electric motors, 4 600 hp
Speed, knots 20 on surface; 10 submerged

Ex-US "Balao" class. Transferred on 24 Oct 1959 after modernisation and overhaul at Pearl Harbour.



ALMIRANTE GARCIA DE LOS REYES

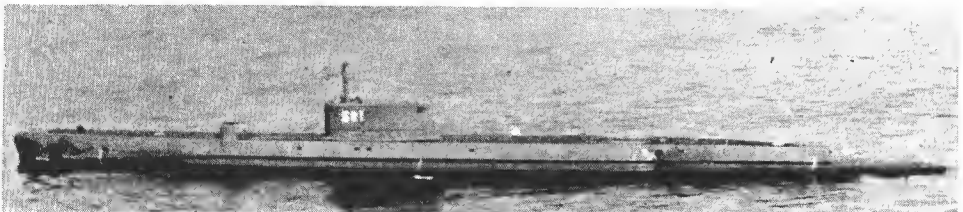
1967, Spanish Navy, Official

2 "D" Class

No.	Laid down	Launched	Completed
D 2	S 21 Sep 1934	12 Dec 1944	2 Apr 1951
D 3	S 22 Sep 1945	20 Feb 1952	20 Feb 1954

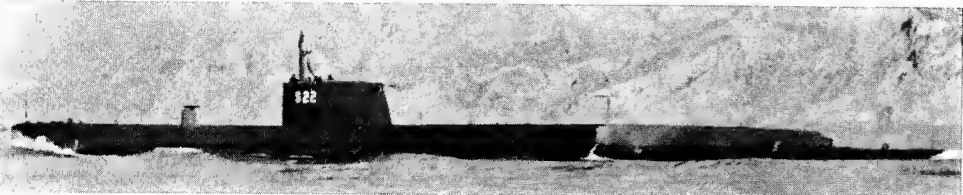
Displacement, tons 1 099 standard; 1 200 surface;
1 480 submerged
Length, feet (metres) 276.5 (84.3)
Beam, feet (metres) 22 (6.7)
Draught, feet (metres) 13 (4.0)
Torpedo tubes 6—21 in (533 mm), 4 fwd, 2 aft
Main engines 2 Sulzer diesels, 5 000 hp
Electric motors, 1 300 hp
Speed, knots 20.5 on surface; 9.5 submerged
Radius, miles 9 000 on surface
Complement 75

Ordered under the 1926 Programme. Both built at the Sociedad Española de Construcción Naval, Cartagena. Diving limit, 50 fathoms. D 2 (S 21) and D 3 (S 22) were delivered after modernisation on 10 Dec and 14 Mar 1963, respectively. Allocated S pennant numbers in 1961. Sister ship D 1 (S 11), not modernised, was deleted from the list in 1966.



D 2

1966, Spanish Navy, Official



D 3

1964, Empresa Nacional Buzan

1 Ex-German Type

G 7 (ex-U 537)	
Displacement, tons	711 standard; 757 surface; 865 submerged
Length, feet (metres)	227.5 (69.3)
Beam, feet (metres)	20.5 (6.3)
Draught, feet (metres)	14.8 (4.5)
Guns, surface	1—3.5 in (90 mm)
Torpedo tubes	5—21 in (522 mm); 4 fwd, 1 aft
Main engines	Diesels, 2 800 hp Electric motors 750 hp
Speed, knots	17.9 on surface; 8.5 submerged
Radius, miles	6 500 on surface
Complement	58



G 7

1966, Spanish Navy, Official

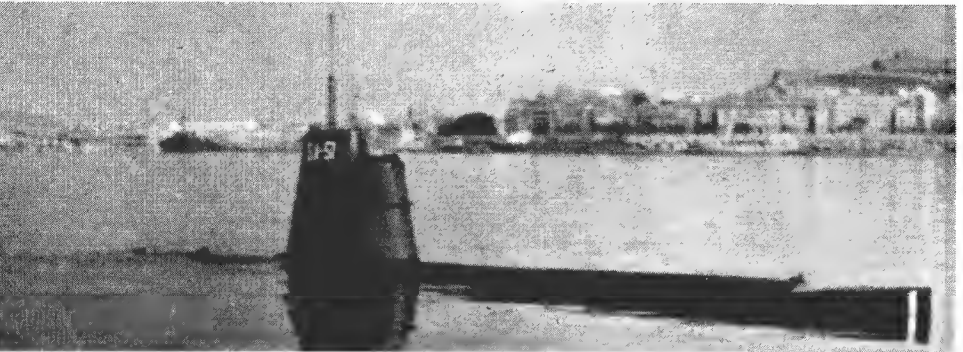
Former German U-boat of the VII type, built by Blohm & Voss, Hamburg. Interned in Spain in 1942. Purchased from Germany the following year. Allocated pennant number S 01 in 1961.

2 "Tiburon" Class

SA 51		SA 52
Displacement, tons	78 surface; 81 submerged	
Length, feet (metres)	70.5 (21.5)	
Beam, feet (metres)	9 (2.7)	
Draught, feet (metres)	9 (2.7)	
Torpedo tubes	2—21 in (533 mm)	
Main engines	Pegaso diesels, 400 hp Electric motors, 400 hp	
Speed, knots	10 on surface; 14.5 submerged	
Complement	5	

Midget submarines launched in 1958. All four originally rated Submarinos Experimentales, but in 1963 designated Assault Submarines with "SA" numbers.

ENGINEERING. The diesels were constructed by the ENASA (former Hispano-Suiza) Barcelona, 200 hp each, at 2 000 rpm, with reduction gear on the single screw disposed in a nozzle in continuation of the conic after hull.



SA 51

1966, Spanish Navy, Official

2 "Foca" Class

SA 41		SA 42
Displacement, tons	16 surface; 20 submerged	
Length, feet (metres)	45.4 (13.9)	
Beam, feet (metres)	6 (1.8)	
Draught, feet (metres)	5 (1.5)	
Torpedo tubes	2—21 in (533 mm)	
Main engines	Pegaso diesel, 160 hp Siemens electric motor 110 hp	
Speed, knots	9.2 on surface; 12 submerged	
Complement	3	

Midget submarines launched in 1957 and numbered 1958.



SA 42

1966, Spanish Navy, Official

Name	No.	Builders	Laid down	Launched	Completed
CANARIAS	C 21	Sociedad Espanola de Construcion Naval, El Ferrol	15 Aug 1928	28 May 1931.	1 Oct 1936

(Rated as Crucero Type 2)

Displacement, tons	10 670 standard; 13 500 full load
Length, feet (metres)	636.5 (194.0)
Beam, feet (metres)	64 (19.5)
Draught, feet (metres)	21.3 (6.5)
Guns, surface	8—8 in (203 mm) 50 cal. 8—4.7 in (120 mm) 45 cal.
Guns, AA	4—1.5 in (38 mm) 70 cal.; 4—37 mm; 2—20 mm
Armour	sides 1.5—2 in (38—50 mm); turrets 1 in (25 mm); magazines 4 in (100 mm)
Boilers	8 Yarrow
Main engines	Parsons geared turbines 92 000 shp; 2 shafts
Speed, knots	31 max, 11 economical sea
Radius, miles	7 800 at 11 knots
Oil fuel (tons)	2 794
Complement	1 022 (40 officers, 982 men)

DESIGN. This ship was designed by the late Sir Philip Watts on the basic pattern of the contemporary British heavy cruisers of the later "County" classes. From initial completion until 1952 she had trunked funnels, but she emerged from refit early in 1953 with two separate funnels, this being a reversion to the original design which had never been carried out.

MODERNISATION. To be completely overhauled as Flagship of the Spanish Navy, under the Spanish Naval Modernisation Programme (United States Military Aid Programme).

TORPEDO TUBES. The 12—21 inch torpedo tubes in triple mountings which she formerly carried, were removed in 1960.

GUNNERY. The maximum elevation of the 8 inch guns is 70 degrees.

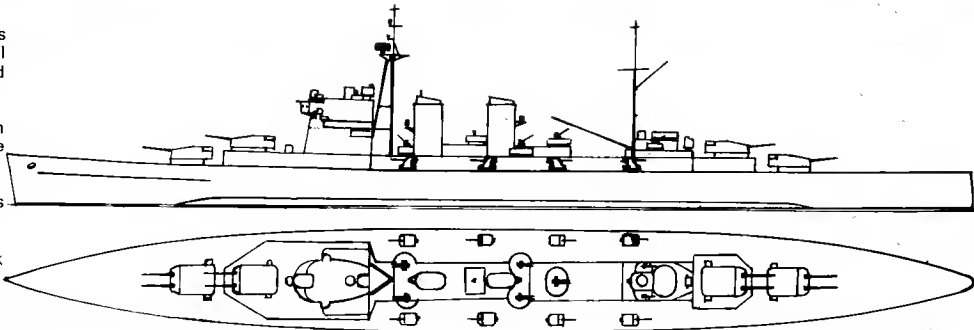
CLASS. Sister ship *Baleares* was torpedoed and sunk on 6 Mar 1938 during the Spanish Civil War.

DISPOSALS "Galicia" Class cruisers:—*Almirante Cervera*, *Galicia* and *Miguel de Cervantes* were stricken from the Navy List in 1966. The anti-aircraft cruiser *Mendez Nuñez* was stricken in 1963, and the light cruiser *Navarra* in 1956.

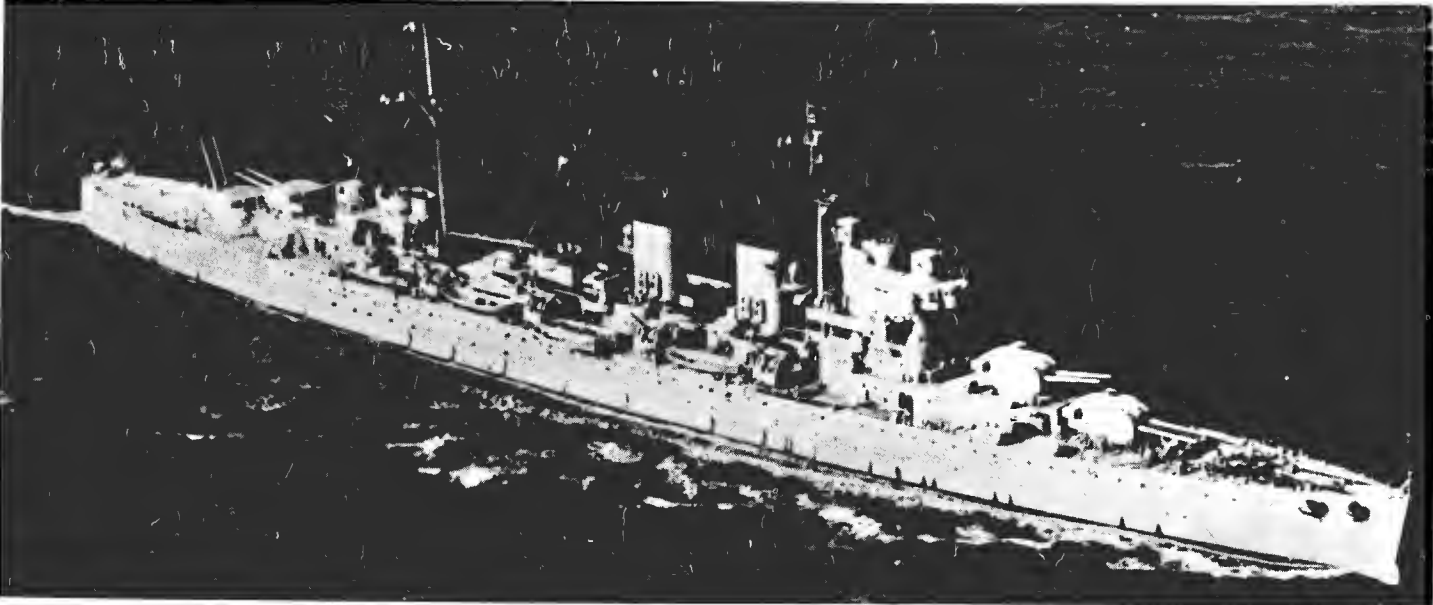


CANARIAS

1967, Spanish Navy, Official

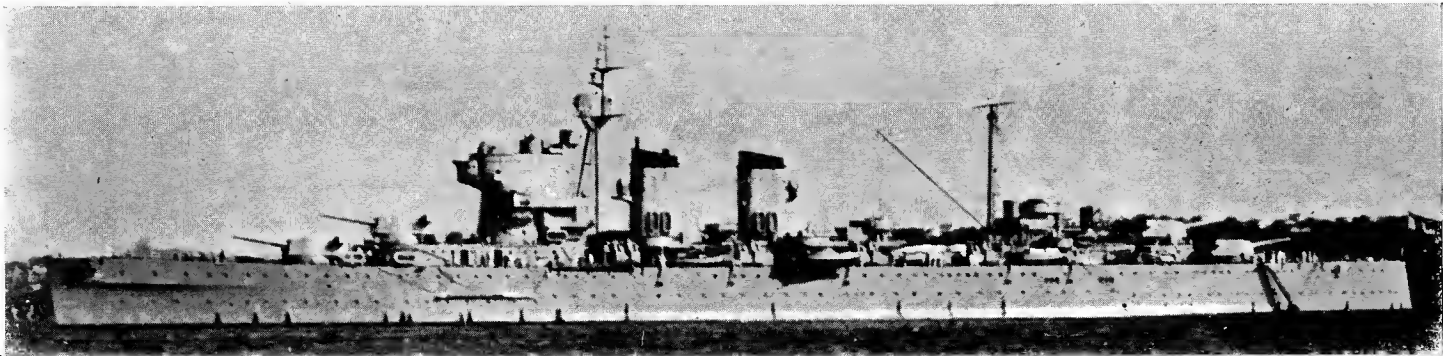


NOMENCLATURE. *Canarias* is named after the **DRAWING**. Port elevation and plan. Redrawn in 1966. Canary Islands. Scale 128 feet = 1 inch.



CANARIAS

1966 Spanish Navy, Official



CANARIAS

1964, Spanish Navy, Official

HELICOPTER CARRIER

	Name	No.	Builders	Laid down	Launched	Completed
DÉDALO	(ex-USS Cabot, ex-Wilmington, AVT 3, ex-CVL 2B)	PH 01	New York Shipbuilding Corporation	16 Aug 1942	4 Apr 1943	24 July 1943

Ex-Aircraft Transport (AVT)
Former Aircraft Carrier (CVL)

Displacement, tons	11 000 standard; 15 800 full load
Length, feet (metres)	600 (182.9) wl; 623 (189.9) oa
Beam, feet (metres)	71.5 (21.8) hull
Draught, feet (metres)	26 (7.9)
Width, feet (metres)	109 (33.2) extreme
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	100 000 shp; 4 shafts
Speed, knots	32

Completed as an aircraft carrier after having been laid down as a cruiser of the "Cleveland" class. Originally carried over 40 aircraft. Converted to ASW, i.e. modified to specialise in anti-submarine warfare, and classed as a "Hunter-Killer Carrier" with strengthened flight and hangar decks, large port side catapult, revised magazine arrangements, new electronic gear, corrected stability to counter added top weight, and a maximum of 26 aircraft. As an aircraft carrier the original complement was 1 109 (159 officers and 950 men). Originally designed to include 4–5 inch guns in armament. Latterly mounted 2B–40 mm AA. Since conversion has only two of her original four funnels.

US approval to loan *Thetis Bay*, LPH 6, former assault helicopter carrier CVHA 1, converted escort aircraft carrier CVE 90, to Spain for five years was rescinded, and instead *Cabot* was reactivated and modernised at Philadelphia Naval Shipyard, for transfer to Spain as a helicopter carrier in 1967.




CABOT added 1966

ANTI-SUBMARINE DESTROYERS (Destructoros Caza Submarinas)

8 "Audaz" Class

8 "Audaz" Class		Name	No.	Laid down	Launched	Completed
		AUDAZ	D 31	26 Sep 1945	24 Jan 1951	30 June 1953
		FUROR	D 34	3 Aug 1945	24 Feb 1955	9 Sep 1960
		INTRÉPIDO	D 3B	14 July 1945	15 Feb 1961	25 Mar 1965
		METEORO (ex-Atrevido)	D 33	3 Aug 1945	4 Sep 1951	30 Nov 1955
		OSADO	D 32	3 Aug 1945	4 Sep 1951	25 Jan 1955
		RAYO	D 35	3 Aug 1945	4 Sep 1951	25 Jan 1956
		RELÁMPAGO	D 39	14 July 1945	26 Sep 1961	7 July 1965
		TEMERARIO	D 37	14 July 1945	29 Mar 1960	16 Mar 1964

Displacement, tons	1 227 standard; 1 548 full load
Length, feet (metres)	295.2 (90.0) pp; 30B.2 (94.0) oa
Beam, feet (metres)	30.5 (9.3)
Draught, feet (metres)	17 (5.2) max
Guns, AA	2—3 in (76 mm) 50 cal. 2—40 mm, 70 cal.
A/S	2 Hedgehogs; 8 mortars; 2 DC racks
Torpedo racks	2 side launching for A/S torpedoes (6 torpedoes)
Boilers	3 La Seine 3-drum type
Main engines	Rateau-Bretagne geared turbines 2B 000 shp; 2 shafts
Speed, knots	31.6
Radius, miles	3,200 at 14 knots
Oil fuel (tons)	290
Complement	191



Based on the design of the French "Le Fier" type. All built at Ferrol. Allocated D Pennant numbers in 1961, but still referred to officially and unofficially as fast frigates, see *Classification* note below.

MODERNISATION. Dates of delivery after modernisation: *Audaz* 28 June 1961, *Furor* 9 Sep 1960, *Meteoro* 21 Feb 1963, *Osado* Aug 1961, *Rayo* 21 Feb 1963. All fitted with US electronic and ASW equipment under MAP.

GUNNERY. Before rearmament and modernisation these ships mounted 3–4.1 inch guns, 4–37 mm AA guns and 8–20 mm AA. guns.

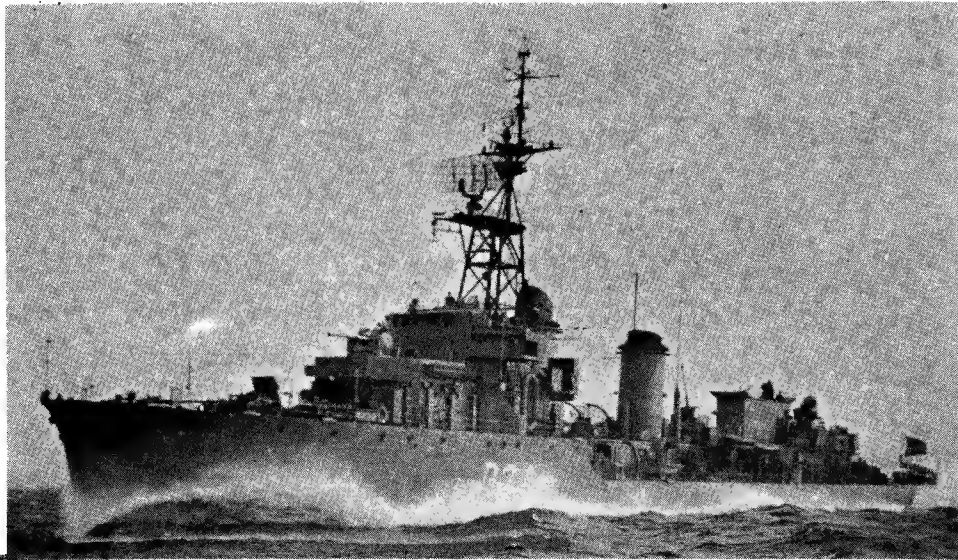
ENGINEERING. The boilers are in two compartments separated by the engine rooms. Steam is superheated to 375 degrees Fahrenheit. Working pressure is 500 lb. per sq in. Engines have developed 30 800 shp on trials and 32,500 shp max = 33 knots.

CLASSIFICATION. These ships were originally projected as conventional destroyers but their classification was changed to fast frigates in 1955, they were again re-rated, as anti-submarine frigates, in 1956, and as anti-submarine destroyers in 1961.

NOMENCLATURE. Meanings of names: *Audaz*, audacious; *Furor*, Fury; *Intrépido*, fearless; *Meteoro*, meteor; *Osado*, daring; *Rayo*, thunderbolt; *Relámpago*, lightning flash; *Temerario*, venturesome.

PHOTOGRAPHS. Photographs of *Audaz* appear in the 1952-53 to 1955-56, 1957-58 and 1962-63 to 1965-66 editions, of *Osada* in the 1956-57 and 1957-58 editions, of *Meteoro* in the 1956-57 to 1960-61 editions, of *Rayo* in the 1956-57 to 1961-62 editions, of *Furor* in the 1961-62 edition, and of *Ariete* in the 1962-63 to 1965-66 editions.

LOSS. Sister ship *Ariete* (battering ram) grounded on 25 Feb 1966 and was declared a total loss.



FUROR 1966, Spanish Navy, Official



TEMERARIO 1966, Spanish Navy, Official

Anti-Submarine Destroyers— continued

1 "Oquendo" Type

2 Modified "Oquendo" Type

Displacement, tons	D 42, D 43: 3 496; D41: 2 582 standard; 3 005 full load
Length, feet (metres)	391.5 (119.3); D 42: 382 (116.4)
Beam, feet (metres)	41 (12.5); D41: 36.5 (11.1)
Draught, feet (metres)	18 (5.6); D41: 12.5 (3.8)
Aircraft	D 42, D 43: DASH
Guns, surface	D42, D43: 3—5 in (127 mm) 38 cal
Guns, dual purpose	D41: 4—4.7 (120 mm) 50 cal, 2 twin
Guns, AA	D41 only: 6—40 mm, 70 cal.
A/S	D41: 2 Hedgehogs, 2 TT racks
Torpedo tubes	D42, 43: 2 triple for A/S torpedoes
Boilers	2—21 in single
Main engines	3 three-drum type
	2 Rateau-8retagne geared turbines
	60 000 shp
Speed, knots	32.4 max
Oil fuel, tons	673 (Oquendo 659)
Complement	308 (Oquendo 249)

All ordered at Ferrol in 1947-48. *Oquendo* was initially completed on 13 Sep 1960, and completed modernisation on 22 Dec 1964.

CONSTRUCTION. Designed as conventional destroyers but modified during construction. The seven 21-inch torpedo tubes and two depth charge throwers were suppressed in favour of more modern anti-submarine weapons.

Name	No.
ALCALA GALIANO (ex-USS <i>Jarvis</i> , DD 799)	D 24
ALMIRANTE FERRANDIZ (ex-USS <i>David W. Taylor</i> DD 551)	D 22
ALMIRANTE VALDÉS (ex-USS <i>Converse</i> , DD 509)	D 23
JORGE JUAN (ex-USS <i>McGowan</i> , DD 678)	D 25
LEPANTO (ex-USS <i>Capps</i> , DD 550)	D 21

Name	No.
MARQUÉS DE LA ENSENADA	D 43
OQUENDO	D 41
ROGER DE LAURIA	D 42

Laid down	Launched
4 Sep 1951	15 July 1959
15 June 1951	5 Sep 1956
4 Sep 1951	12 Nov 1958



OQUENDO

1964, Empresa Nacional Bazari

Roger de Lauria and *Marqués de la Ensenada* were towed to Cartagena for reconstruction to a new design. Sisters *Bías de Lazo*, *Blasco de Garay*, *Bonifaz*, *Gelmírez*, *Langara* and *Recalde* were cancelled in 1953.

CLASSIFICATION. This class was re-classified as anti-submarine frigates in 1955, again re-rated as fast frigates in 1956, and as anti-submarine destroyers in 1961.

Builders	Laid down	Launched	Completed
Todd Pacific Shipyards	—	14 Feb 1944	3 June 1944
Gulf SB Corpn, Chickasaw, Ala	12 June 1941	4 July 1942	18 Sep 1943
Bath Iron Works Corp, Maine	23 Feb 1942	30 Aug 1942	8 June 1943
Federal SB & DD Co	—	14 Nov 1943	20 Dec 1943
Gulf SB Corpn, Chickasaw, Ala	12 June 1941	31 May 1942	23 June 1943

5 "Lepanto" Class

Displacement, tons	2 080 standard; 2 750 normal; 3 050 standard
Length, feet (metres)	376.5 (114.8) oa
Beam, feet (metres)	39.5 (12.0)
Draught, feet (metres)	18 (5.5)
Guns, surface	D21, D22: 5—5 in (127 mm) 38 cal.; Others: 4—5 in (127 mm) single mounts
Guns, AA	D21, D22: 6—40 mm 8ofors; D21: 12—20 mm Oerlikon (6 in D22); Others: 6—3 in (76 mm) 50 cal., 3 twin
A/S	2 Hedgehogs; 6 DCT; 2 DC racks
Torpedo tubes	5—21 in (533 mm) quintupled
Torpedo racks	2 side launching for A/S torpedoes
Boilers	4 Babcock & Wilcox
Main engines	Allis Chalmers geared turbines
	60 000 shp; 2 shafts
Speed, knots	36 max, 16 economical sea
Radius, miles	5 800 at 16 knots
Oil fuel (tons)	650
Complement	290 (17 officers, 273 men)

Former United States fleet destroyers. *Capps*, renamed *Lepanto*, and *David W. Taylor*, renamed *Almirante Ferrandiz*, were the first units of the "Fletcher" class to be transferred to a foreign government: loaned to Spain for a period of five years, they were reconditioned at San Francisco and turned over to the Spanish Navy at San Francisco, California, on 15 May 1957, sailing for Spain on 1 July 1957. *Converse*, renamed *Almirante Valdes*, was transferred to the Spanish Navy at Philadelphia on 1 July 1959. *McGowan*, renamed *Jorge Juan*, was transferred at Barcelona on 1 Dec 1960 and *Jarvis* at Philadelphia on 3 Nov 1960, both being of the Later "Fletcher" class and transferred on a five year renewable loan basis, under the Military Aid Programme. All five ships were allocated D pennant numbers in 1961.

PHOTOGRAPHS. A port bow oblique aerial view of *Almirante Ferrandiz* appears in the 1958-59 and 1959-60 editions. a port dead broadside surface view of *Lepanto* in the 1958-59 to 1961-62 editions, a starboard bow view of *Almirante Valdes* (as re-armed) appears in the 1960-61 edition, starboard bow surface view of *Alcalá Galiano* in the 1961-62 to 1965-66 editions, and a port broadside surface view of *Almirante Ferrandiz* in the 1962-63 to 1965-66 editions.

APPEARANCE. *Alcalá Galiano* and *Jorge Juan* have tripod mast, and *Almirante Ferrandiz*, *Almirante Valdes* and *Lepanto* have pole mast. See also differing number of 5 inch guns in data table above.



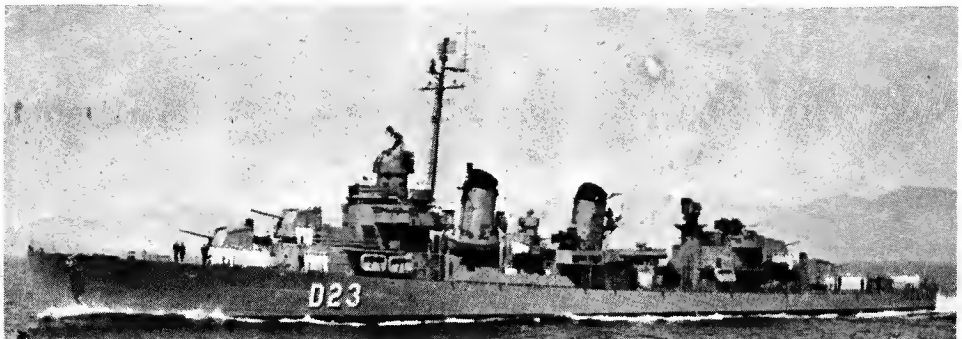
LEPANTO (five 5 inch, pole mast)

1966, Spanish Navy, Official



JORGE JUAN (four 5 inch, tripod mast)

1966, Spanish Navy, Official



ALMIRANTE VALDÉS (four 5 inch, pole mast)

1966, Spanish Navy, Official

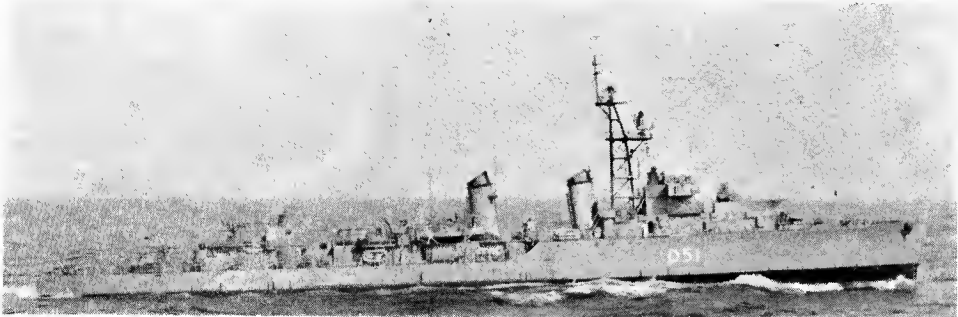
DESTROYERS (Destructores)

Name	No.	Builders	Laid down	Launched	Completed	Modernised
ALAVA	D 52 (ex-23)	Cartagena	21 Dec 1944	19 May 1947	21 Dec 1950	17 Jan 1962
LINIERS	D 51 (ex-21)	Cartagena	1 Jan 1945	1 May 1946	27 Jan 1951	18 Sep 1962

2 "Alava" Class

Displacement, tons	1 842 standard; 2 287 full load
Length, feet (metres)	336.3 (102.5)
Beam, feet (metres)	31.5 (9.6)
Draught, feet (metres)	19.7 (6.0)
Guns, AA	3—3 in (76 mm) 50 cal., Mk 22; 3—40 mm, 70 cal.
A/S	2 Hedgehogs; 8 DC mortars; 6 DC racks
Torpedo racks	2 side launching, 6 A/S torpedoes
Boilers	3 Yarrow 3-drum type
Main engines	Parsons geared turbines 31 500 shp; 2 shafts
Speed, knots	29 max, 12 economical sea
Radius, miles	3 500 at 16 knots
Oil fuel (tons)	370
Complement	224 (17 officers, 207 men)

CONSTRUCTION. These two destroyers, a development of the *Churruca* design were ordered in 1936, but construction was held up by the Civil War. After being resumed, it was again suspended in 1940, but restarted at the Empresa Nacional Bazan, Cartagena in 1944.



LINIERS

1966, Spanish Navy, Official

PHOTOGRAPHS. Photographs of *Alava* appear in the 1953-54 to 1965-66 editions.
GUNNERY. Before modernisation on the lines of fast frigates these ships mounted 4—4.7 inch, 6—37 mm AA and 3—20 mm AA guns.

TORPEDO TUBES. This class have had no torpedo tubes since they were modernised in 1962. They formerly carried 6—21 inch (tripled), but now have torpedo racks for six homing torpedoes instead of tubes.

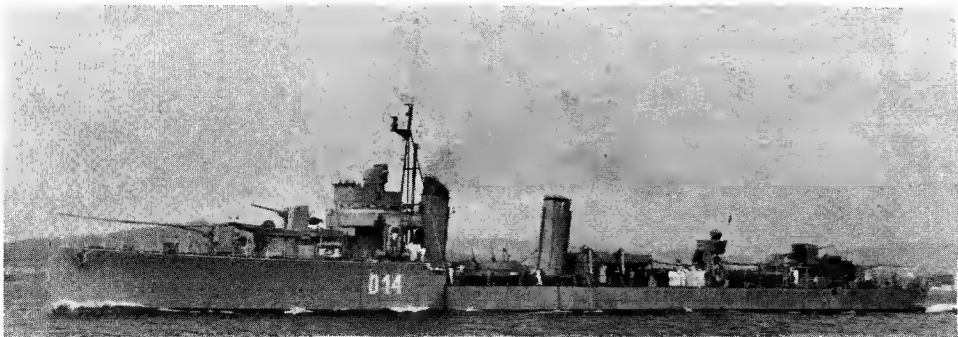
2 "Almirante Antequera" Class
("Churruca" Group 2)

Displacement, tons	1 590 standard; 2 130 full load
Length, feet (metres)	320 (97.5) pp; 333 (101.5) oa
Beam, feet (metres)	31.8 (9.7)
Draught, feet (metres)	19.7 (6.0)
Guns, surface	4—4.7 (120 mm) 45 cal.
Guns, AA	2—20 mm
A/S	4 DCT
Torpedo racks	Side launching for A/S torpedoes
Boilers	4 Yarrow
Main engines	2 sets Parsons geared turbines 42 000 shp; 2 shafts
Speed, knots	27 max, 13 economical sea
Radius, miles	2 100 at 13 knots
Oil fuel (tons)	500
Complement	202 (10 officers, 192 men)

Built at Cartagena by Sociedad Española de Construcción Naval. This class is a later version of the "*Sanchez Barcaiztegui*" design. Now have D pennant numbers painted on bows which replaced the former numbers in 1961.

Name	No.
ALMIRANTE ANTEQUERA	D 14
ALMIRANTE MIRANDA	D 15

Launched	Completed
29 Dec 1930	30 May 1935
20 Oct 1931	30 May 1935



ALMIRANTE ANTEQUERA

1965, Spanish Navy, Official

DISPOSALS
Of the "Churruca" Group 2, *Ciscar*, sunk in the Civil War in Oct 1937, but salvaged and refitted in 1938-39, ran aground in fog and broke her back off El Ferrol on 17 Oct 1957, and was discarded in 1958. *Jorge Juan* was removed from the Navy List in 1959, and *Escaño*, *Gravina* and *Ulloa* in 1964.

Of the "Churruca" Group 1, *Lepanto*, *Alcala Galiano* and *Almirante Valdes* were removed from the list in 1957, *Churruca* in 1964, *Sanchez Barcaiztegui* in 1965, and *Jose Luiz Diez* in 1966.
Of the "*Alsedo*" class, *Alsedo* and *Velasco* were removed from the list in 1957, and *Lazaga* in 1961.

FRIGATES (rated as Fragatas)

5 Guided Missile Armed
U.S. DEG Type

DEG 7	DEG 8	DEG 9	DEG 10	DEG 11
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Displacement, tons	2 643 standard; 3 426 full load
Guided weapons	1 launcher for "Tartar" surface-to-air missiles
Length, feet	414.5
Beam, feet	44
Draft, feet	24 max

CONSTRUCTION. In June 1966 Spain and USA signed an agreement for construction of five frigates in Spain with technical and material assistance by USA. To be built at Ferrol. Generally similar to the US guided missile escort ships of the "Brooke" class.

8 "Pizarro" Class

Displacement, tons	1 924 standard; 2 228 full load
Length, feet (metres)	279 (85.0) pp 312.5 (95.30) oa
Beam, feet (metres)	39.5 (12.0)
Draught, feet (metres)	17.7 (5.4)
Guns, surface	F41, F42: 2—5 in (127 mm) 38 cal. Others: 6—4.7 in (120 mm) 3 twin
Guns, AA	F41, F42: 4—40 mm, 70 cal. Others: 8—37 mm; 6—20 mm
A/S	F41, F42: 2 Hedgehogs; 8 mortars; 2 racks; Others: 4 DCT
Torpedo racks	F41, F42: 2 side launching for A/S torpedoes
Mines	30 can be carried
Boilers	2 Yarrow
Main engines	2 sets Parsons geared turbines 6 000 shp; 2 shafts
Speed, knots	18.5
Radius, miles	4 000 at 14 knots
Oil fuel (tons)	390
Complement	291 (14 officers, 277 men)

All built at Ferrol. Designed to carry 30 mines. Rated as Canoneras (Gunboats) until 1958 when they were officially re-rated as Fragatas. Allocated F pennant numbers in 1961. *Legazpi* and *Vicente Yañez Pinzon* completed modernisation on 14 Jan and 25 Mar 1960 respectively. A photograph of *Vicente Yañez Pinzon* after modernisation appears in the 1962-63 to 1965-66 editions.

Name	No.
HERNAN CORTES	F 32
LEGAZPI	F 42
MAGALLANES	F 35
MARTIN ALOÑSO PINZON	F 34
PIZARRO	F 31
SARMIENTO DE GAMBOA	F 36
VASCO NUÑEZ DE BALBOA	F 33
VICENTE YAÑEZ PINZON	F 41

Launched	Completed
3 Aug 1944	18 Sep 1947
8 Aug 1944	8 Aug 1951
8 Aug 1944	20 Dec 1948
3 Aug 1944	18 Mar 1948
3 Aug 1944	9 Aug 1946
8 Aug 1944	2 May 1950
3 Aug 1944	15 Mar 1947
3 Aug 1944	5 Aug 1949



LEGAZPI

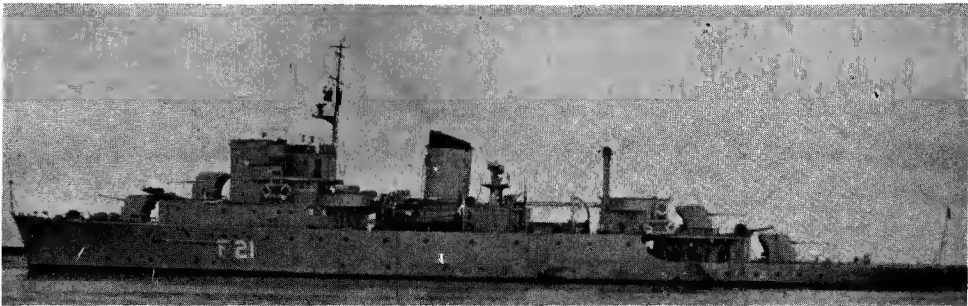
1966, Spanish Navy, Official

FRIGATE MINELAYERS (Minadores)

2 "Eolo" Class

Name	No.	Launched	Completed
EOLO	F 21	30 Sep 1939	1 Jan 1942
TRITÓN	F 22	26 Feb 1940	18 Oct 1943

Displacement, tons 1 723 standard; 1 942 full load
Length, feet (metres) 291.7 (88.9) oa
Beam, feet (metres) 38.5 (11.7)
Draught, feet (metres) 17.7 (5.4) max
Guns, dual purpose 4—4.1 in (105 mm)
Guns, AA 4—37 mm
A/S 2 DCT
Mines Stowage for 170 *Eolo*. 180 *Tritón*
Boilers 2 Yarrow
Main engines Parsons geared turbines
5 000 shp; 2 shafts
Speed, knots 19.5 max, 12 economical sea
Oil fuel (tons) 300
Complement 224 (9 officers, 215 men)



EOLO

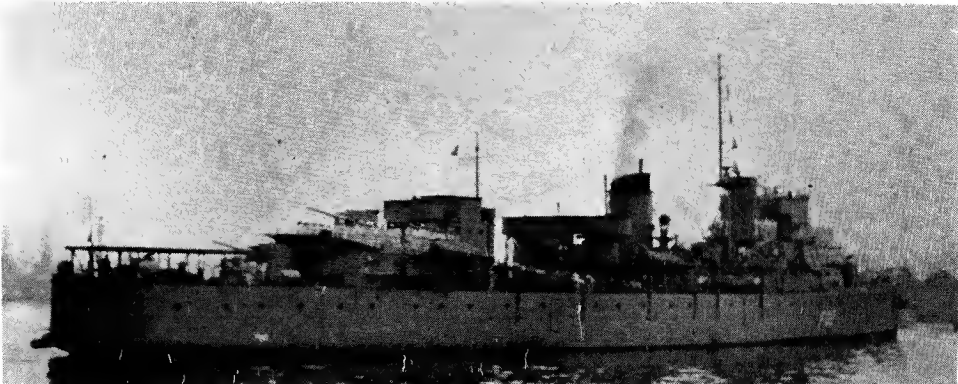
1967, Spanish Navy, Official

Both built by the Sociedad Española de Construcción Naval, Ferrol. Allocated F pennant numbers in 1961. A photograph of *Tritón* appears in the 1962-63 to 1966-67 editions.

4 "Jupiter" Class

Name	No.	Launched	Completed
JUPITER	F 11	14 Sep 1935	1937
MARTE	F 01	19 June 1936	1937
NEPTUNO	F 02	17 Dec 1937	1939
VULCANO	F 12	12 Oct 1935	1937

Displacement, tons 2 103 standard; 2 245 full load
Length, feet (metres) 302.8 (92.3) pp; 328 (100.0) oa
Beam, feet (metres) 41.5 (12.6)
Draught, feet (metres) 11.5 (3.5)
Guns, surface F 01 and F 02 only: 4—4.7 in (120 mm)
Guns, AA F 01: 4—2.5 in (63 mm); 4—20 mm; F 02: 4—37 mm; 3—20 mm
F 11 and F 12 as modernised:—
4—3 in (76 mm) Mk 26, single; 4—40 mm, 70 cal.
A/S F 11 and F 12 as modernised:—
2 Hedgehogs; 8 mortars; 2 DC racks
Mines Stowage for 264 but normally less
Boilers 2 Yarrow
Main engines 2 sets Parsons geared turbines
5 000 shp; 2 shafts
Speed, knots 17.4 max, 10 economical sea
Oil fuel (tons) 280
Complement 243 (16 officers, 227 men)



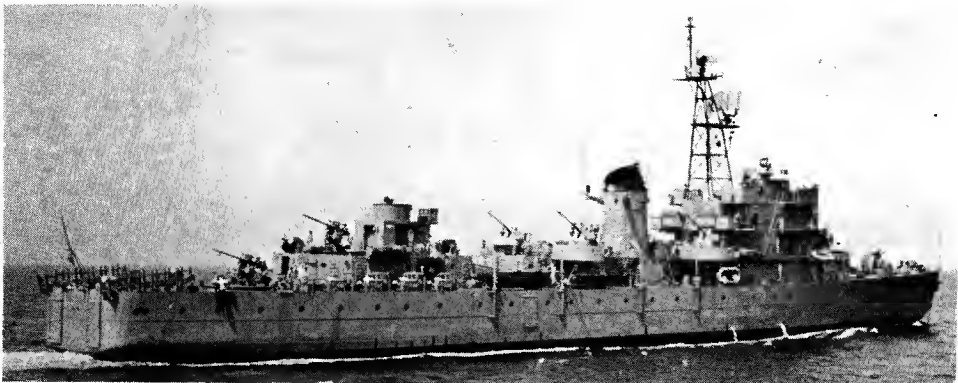
NEPTUNO (four 4.7 inch, pole mast)

1966, courtesy Professor Alfredo Aguilera

All built by the Sociedad Española de Construcción Naval, Ferrol. Multi-purpose frigates or gunboats and cruising type minelayers. *Neptuno* is midshipmen's training ship. The modernisation of *Jupiter* was completed on 28 Oct 1960, and of *Vulcano* on 28 Feb 1961. All allocated F pennant numbers in 1961.

PHOTOGRAPHS. A port broadside view of *Neptuno* appears in the 1956-57 to 1963-64 editions, a port bow view of *Jupiter* as modernised in the 1961-62 editions, a port broadside view of *Vulcano* as modernised in the 1962-63 to 1965-66 editions, and a starboard quarter view of *Jupiter* in the 1964-65 and 1965-66 editions.

DISPOSALS. The frigate *Canovas del Castillo* was stricken from the list in 1959, and the larger frigate *Calvo Sotelo* (ex-*Zacatecas*) in 1957.



VULCANO (four 3 inch, lattice mast)

1966, Spanish Navy, Official

CORVETTES (Corbetas)

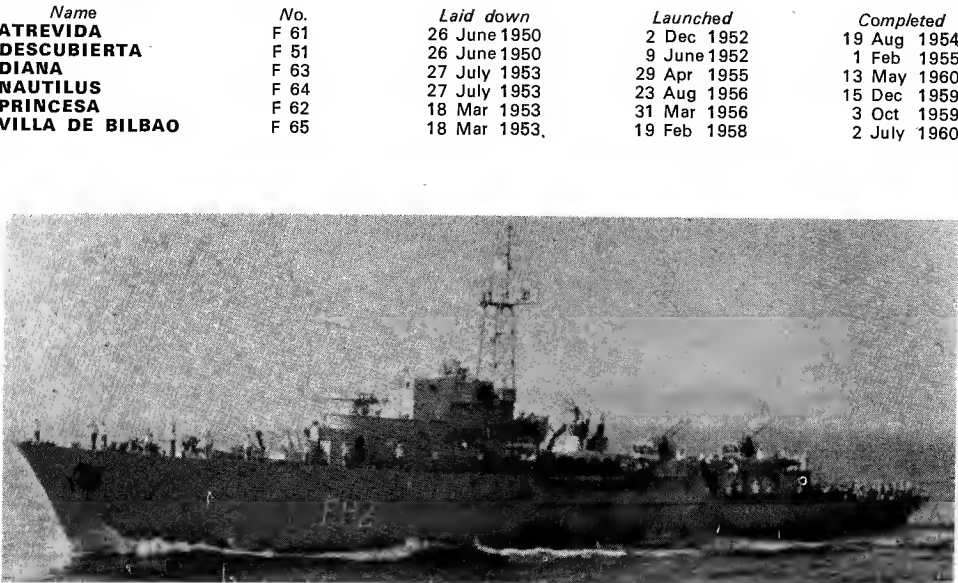
6 "Atrevida" Class

Name	No.	Laid down	Launched	Completed
ATREVIDA	F 61	26 June 1950	2 Dec 1952	19 Aug 1954
DESCUBIERTA	F 51	26 June 1950	9 June 1952	1 Feb 1955
DIANA	F 63	27 July 1953	29 Apr 1955	13 May 1960
NAUTILUS	F 64	27 July 1953	23 Aug 1956	15 Dec 1959
PRINCESA	F 62	18 Mar 1953	31 Mar 1956	3 Oct 1959
VILLA DE BILBAO	F 65	18 Mar 1953	19 Feb 1958	2 July 1960

Displacement, tons 997 standard; 1 135 full load
Length, feet (metres) 247.8 (75.5) oa
Beam, feet (metres) 33.5 (10.2)
Draught, feet (metres) 9 (2.7)
Guns, dual purpose F 51 only: 1—4.1 in (105 mm) 45 cal. Remainder: 1—3 in (76 mm) 50 cal. Mk 26
Guns, AA F 51 only: 4—37 mm, 80 cal. Remainder: 3—40 mm, 70 cal.
A/S F 51 only: 4 DCT Remainder: 2 Hedgehogs 8 mortars; 2 DC racks
Mines 20 can be carried
Main engines Sulzer diesels
3 200 bhp; 2 shafts
Speed, knots 18.5
Radius, miles 8 000 at 7 knots
Oil fuel (tons) 100
Complement 132 (10 officers, 122 men)

Atrevida commissioned on 19 Aug 1954, *Descubierta* in 1955. All except *Descubierta* have been modernised since 1959. *Princesa* was delivered on 3 Oct 1959, *Nautilus* on 15 Dec 1959, *Diana* on 13 May 1960, *Atrevida* on 14 June 1960 and *Villa de Bilbao* on 2 July 1960. Allocated F pennant numbers in 1961.

PHOTOGRAPHS. A photograph of *Descubierta* appears in the 1955-56 to 1959-60 editions, of *Diana* rearmad with lattice mast in the 1960-61 edition, and of *Villa de Bilbao* as modernised in the 1961-62 to 1965-66 editions.



PRINCESA

1967, Spanish Navy, Official

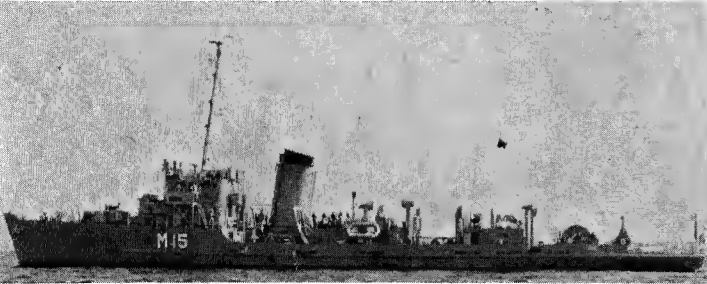
FLEET MINESWEEPERS (Dragaminas)

7 "Almanzora" Class

Name	No.	Builders	Launched	Completed	Modernised
ALMANZORA	M 14	Cartagena	27 July 1953	Nov 1954	20 May 1960
EO	M 17	Cadiz	22 Sep 1953	Mar 1955	22 Mar 1961
EUME	M 13	Cartagena	27 July 1953	Dec 1953	20 July 1960
GUADALHORCE	M 16	Cartagena	18 Feb 1953	Dec 1953	18 Feb 1960
GUARDIARO	M 11	Cartagena	26 June 1950	Apr 1953	14 Dec 1959
NAVIA	M 15	Cadiz	28 July 1953	Mar 1955	22 Nov 1960
TINTO	M 12	Cartagena	26 June 1950	May 1953	28 July 1959

Displacement, tons 671 standard; 770 full load
Dimensions, feet 243.8 x 33.5 x 12.3 max
Guns 2—20 mm AA
Main engines Triple expansion and exhaust turbines; 2 shafts;
2 400 hp = 16 knots
Boilers 2 Yarrow
Oil fuel, tons 90
Radius, miles 1 000 at 6 knots
Complement 79

Former Pennant Nos were DM 11, 13, 10, 14, 8, 12, 9, respectively. Allocated new M Pennant Nos in 1961. Until modernisation the armament also included 1—3.5 in gun and 1—37 mm AA gun.



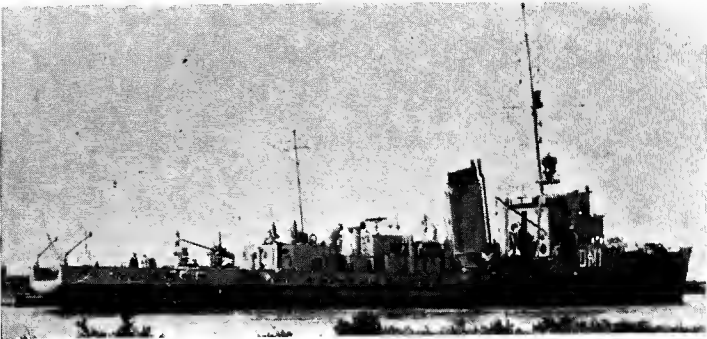
NAVIA 1967, Spanish Navy, Official

6 "Bidasoa" Class

Name	No.	Builders	Launched	Completed
BIDASOA	M 01	Cartagena	15 Sep 1943	5 Apr 1946
LEREZ	M 03	Cartagena	21 Dec 1944	12 Feb 1947
NERVION	M 02	Cartagena	15 Apr 1944	4 June 1946
SEGURA	M 05	Cartagena	6 Oct 1948	20 Dec 1948
TAMBRE	M 04	El Ferrol	18 Oct 1944	21 July 1946
TER	M 06	Cartagena	18 Feb 1948	22 July 1948

Displacement, tons 555 standard; 470 full load
Dimensions, feet 200.5 x 28 x 12 max
Guns 1—4.1 in; 1—37 mm AA; 2—20 mm AA
Main engines Triple expansion and exhaust turbines; 2 shafts;
2 400 hp = 16.5 knots
Boilers 2 Yarrow
Oil fuel, tons 135
Radius, miles 1 060 at 10 knots
Complement 82

German M-Boote 40 type. Named after rivers. Formerly carried pennant numbers DM 1, 5, 3, 2, 6, 4, 7, respectively. Allocated new M pennant numbers in 1961. *Guadaleite*, of this class, which was employed as a coastguard vessel, sank in a gale 20 miles east of Gibraltar on 25 Mar 1954.



BIDASOA 1964, Spanish Navy, Official

PATROL BOAT

CABO FRADERA

Displacement, tons 25 standard; 28 full load
Dimensions, feet 58.5 x 14 x 5.2
Main engines 2 diesels; 760 bhp = 12 knots
Complement 9

Built at La Carraca, in 1963. (River patrol boat *Cabo Fradera* was disposed of).

AUXILIARY PATROL VESSELS

RR 10	RR 19	RR 20	RR 28
Displacement, tons 364 standard; 498 full load			
Dimensions, feet 124 x 29 x 10			
Guns 1—47 mm; 1—20 mm AA			
Main engines Triple expansion; 1 shaft; 800 ihp = 11.5 knots			
Coal, tons 200			
Radius, miles 620 at 10 knots			

Former tugs. All launched in 1941-42. A photograph appears in the 1957-58 edition.

PATROL VESSELS (Patrulleros)

JAVIER QUIROGA (ex-Blue Arrow, ex-USS PC 1211)

Displacement, tons 362 standard; 440 full load
Dimensions, feet 170 wl; 172.7 oa x 23 x 10.8
Guns 2—37 mm
Main engines 2 diesels; 2 shafts; 3 500 bhp = 20 knots

Former US submarine chaser of the "173 ft" steel type. Built by Luders Marine Construction Co, Stamford, Conn. Laid down on 11 Aug 1942, launched on 12 Mar 1943, and completed on 16 Aug 1943. Transferred on 24 Oct 1956.



JAVIER QUIROGA 1966, Spanish Navy, Official

CANDIDO PEREZ (ex-SC 679)

Displacement, tons 108 standard; 138 full load
Dimensions, feet 107.5 wl; 111 oa x 19 x 7
Guns 1—40 mm AA; 3—20 mm
A/S weapons 2 DCT
Main engines GM diesels; 2 shafts; 1 000 bhp = 15.6 knots
Radius, miles 2 300

Former United States submarine chaser of the "110 ft" wooden type. Built by Walter E. Abrams Shipyard, Inc. Laid down on 4 Mar 1942. Launched on 29 Aug 1942. Completed on 19 Dec 1942. Transferred to Spain in 1957.



CANDIDO PEREZ 1966, Spanish Navy, Official

COASTAL MINESWEEPERS

12 Ex-U.S. AMS Type

DUERO (ex-Spoonbill, MSC 202)	M 28	NALÓN (ex-AMS 139)	M 21
EBRO (ex-MS-C 269)	M 26	ODIEL (ex-MS-C 288)	M 32
GENIL (ex-MS-C 279)	M 31	SIL (ex-Redwing, MSC 200)	M 29
JUCAR (ex-AMS 220)	M 23	TAJO (ex-MS-C 287)	M 30
LLOBREGAT (ex-AMS 143)	M 22	TURIA (ex-AMS 130)	M 27
MIÑO (ex-AMS 266)	M 25	ULLA (ex-AMS 265)	M 24

Displacement, tons 355 standard; 384 full load
Dimensions, feet 138 pp; 144 oa x 27.2 x 8
Guns 1—20 mm AA
Main engines 2 diesels; 2 shafts; 900 bhp = 14 knots
Oil fuel, tons 30
Radius, miles 2 700 at 10 knots
Complement 39

Anti-magnetic minesweepers transferred from the USA. *Nalón* on 16 Feb 1954, *Llobregat* on 5 Nov 1954, *Turia* on 1 June 1955, *Jucar* on 22 June 1956, *Ulla* on 24 July 1956, *Miño* on 25 Oct 1956, *Redwing* and *Spoonbill* on 16 June 1959, *Ebro* on 19 Dec 1958, *Genil* on 11 Sep 1959, *Tajo* on 9 July 1959 and *Odiel*, 9 Oct 1959.

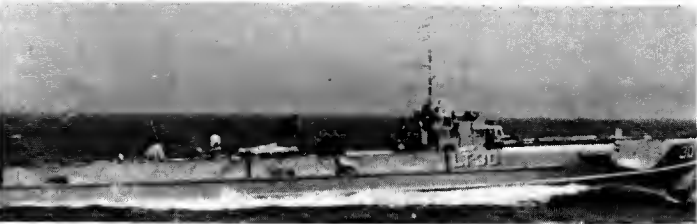


ULLA 1962, A. & J. Pavia

MOTOR TORPEDO BOATS
(Lanchas Torpederas)

LT 30	LT 31	LT 32
Displacement, tons	100 standard; 116 full load	
Dimensions, feet	114 × 16.8 × 5	
Guns	1—20 mm AA	
Tubes	2—21 in	
Main engines	3 diesel; 3 shafts; 7 500 bhp = 41 knots	
Oil fuel, tons	20	
Radius, miles	650 at 30 knots	
Complement	26	

Built at La Carraca, Cadiz, to the design of Lurssens of Bremen. LT 31 was commissioned on 21 July 1956. L 32 was launched in 1956. (photograph in 1960-61 to 1966-67 editions). LT 27, LT 28 and LT 29 were discarded in 1963.



LT 30 1967, Spanish Navy, Official

LANDING SHIPS (Borcasas de Desembarco)

LSM 1 (ex-USS LSM 329)	LSM 2 (ex-USS LSM 331)	LSM 3 (ex-USS LSM 343)
Displacement, tons	930 standard; 1 094 full load	
Dimensions, feet	196.5 wl × 203.5 oa × 34.5 × 8.3	
Guns	1—40 mm AA; 2—40 mm AA	
Main engines	2 diesels; 2 shafts; 3 600 bhp = 12.5 knots	
Complement	59	

Medium landing ships transferred at Bremerton Washington on 25 Mar 1960.



LSM 2 1965, Spanish Navy, Official

K 1	K 2	K 3	K 4	K 5
Displacement, tons	481 standard; 868 full load			
Dimensions, feet	187 × 38.8 × 5.5			
Main engines	2 diesels; 1 000 bhp = 7 knots			

Built by Bazan, Ferrol. Of British LCT (4) Type, (There are also 13 LCMs (Lanchas de Desembarco), LCM 1 to LCM 13, and 5 LCPs, LCP 1 to LCP 5).

SURVEY SHIPS (Buques Hydrografos)

MALASPINA (ex-Bausa)	TOFIÑO
Displacement, tons	998 standard; 1 255 full load
Dimensions, feet	224.5 × 35 × 11
Guns	1—37 mm
Main engines	Triple expansion; 2 shafts; 810 ihp = 12.5 knots
Boilers	2 Yarrow
Complement	181

Built by Matagorda, Cadiz and Ferrol, respectively. Launched on 13 Sep 1935 and 21 Aug 1933. Photograph of *Malaspina* in the 1957-58 to 1964-65 editions.



TOFIÑO 1965, Spanish Navy, Official

JUAN DE LA COSA (ex-Artabro)	H 2
Displacement, tons	770 standard; 1 100 full load
Dimensions, feet	188 × 35.5 × 8.8
Main engines	8. 8. W diesels; electric drive; 500 bhp = 9 knots

Launched by UNL, Valence in 1935. Photograph in 1950-51 to 1957-58 editions.

H 2	H 3
Displacement, tons	221 standard; 281 full load
Dimensions, feet	100 × 20 × 9
Main engines	2 triple expansion; 200 ihp

TRANSPORTS

ALMIRANTE LOBO (ex-Torrelaguna)	
Displacement, tons	5 662 standard; 8 038 full load
Dimensions, feet	362.5 × 48.2 × 25.7
Guns	2—37 mm, 60 cal
Main engines	1 triple expansion; 2 000 ihp = 12 knots

Ex-cargo vessel. Built at Astilleros Echevarrieta, Cadiz. Commissioned 4 Oct 1954.



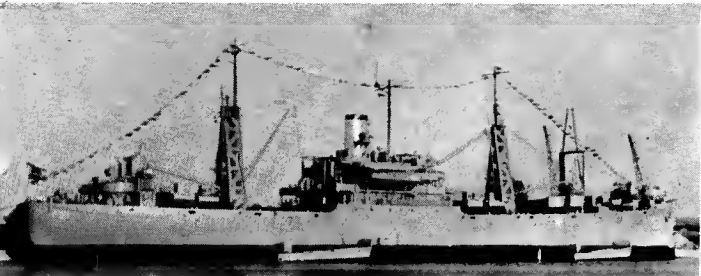
ALMIRANTE LOBO 1964, Spanish Navy, Official

ARAGON (ex-USS Noble), APA 218)	CASTILLA (ex-USS Achernar, AKA 53)
Displacement, tons	6 720 light; 12 450 full load
Dimensions, feet	436.5 wl; 455 oa × 63.5 × 24 max
Main engines	Gearred turbines; 8 500 shp = 17 knots
Boilers	2 Babcock & Wilcox

Former US Attack Transport, transferred at San Francisco on 19 Dec 1964.

CASTILLA (ex-USS <i>Achernar</i> , AKA 53) TA 21	
Displacement, tons	7,430 light; 11 416 full load
Dimensions, feet	435 wl; 457.8 oa × 63 × 24
Guns	1—5 in, 38 cal; 8—40 mm, 60 cal
Main engines	2 GE geared turbines; 12 000 shp = 16 knots
Boilers	2 Foster-Wheeler

Former US Attack Cargo Ship, transferred at New York on 2 Feb 1965.



CASTILLA 1966, courtesy Professor Alfredo Aguilera

PATROL VESSELS (Guardacostas)

CENTINELA	SERVIOLA
Displacement, tons	255 standard; 282 full load
Dimensions, feet	117.5 × 22.5 × 9.8
Guns	2—37 mm
Main engines	1 diesel; 430 bhp = 12 knots

Completed at Ferrol, in 1953. Rated as Fishery Protection Vessels (Guardapescas).

PEGASO	PROCYON
Displacement, tons	436 standard; 498 full load
Dimensions, feet	137.8 × 27 × 9.5
Guns	2—20 mm AA
Main engines	1 shaft; 532 bhp = 12 knots

Both commissioned at Cartagena in Jan 1951. Rated as Coastguard Vessels (Guardacostas). Photograph of *Pegaso* in the 1961-62 to 1965-66 editions.



PROCYON 1966, Spanish Navy, Official

CIES	SALVORA
Displacement, tons	180 standard; 275 full load
Dimensions, feet	107 × 20.5 × 9
Guns	1 MG
Main engines	1 Sulzer diesel; 400 bhp = 12 knots

Purchased in Dec 1952. Rated as Fishery Protection Vessels (Guardapescas).

AZOR	
Displacement, tons	442 standard; 486 full load
Dimensions, feet	153 × 25.2 × 12.5
Main engines	2 diesels; 1 200 bhp = 12 knots

Fishery Protection Launch (Lancha Guardapescas). Used as the Caudillo's yacht.

Patrol Vessels—continued

ARCILA (ex-William Doak)	XAUEN (ex-Henry Cramwell)
Displacement, tons	462 standard; 692 full load
Dimensions, feet	138.5 pp; 148.5 oa × 23.8 × 14.7
Guns	2—3 in (Xauen, 1—3 in; 1—47 mm AA)
Main engines	500 ihp = 10 knots
Coal, tons	200
Complement	57

"Mersey" type trawlers. Launched in 1918 by Goole SB & Rep Co, and Lobnitz. Arcila is rated as a guardacosta and Xauen as an oceanographicos.

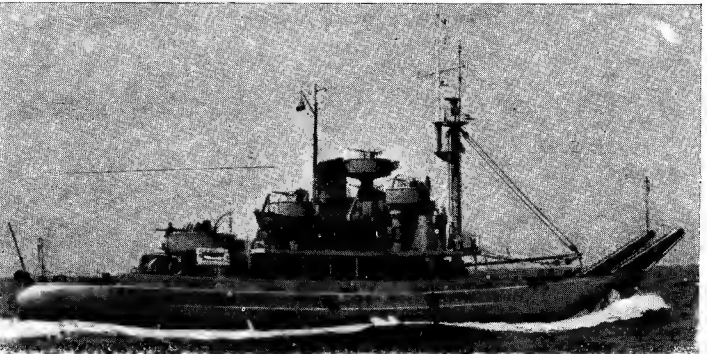
UAD KERT (ex-Rother, ex-Anthony Aslett)	
Displacement, tons	649 standard; 752 full load
Dimensions, feet	130 pp × 23.5 × 15.5
Guns	1—3 in
Main engines	500 ihp = 9.5 knots
Coal, tons	200
Complement	51

Built by Cochrane & Sons Ltd, Selby. Launched in 1917. "Special" type trawler.

BOOM DEFENCE VESSEL (Cola-Redes)

CR 1 (ex-G 6)	
Displacement, tons	630 standard; 831 full load
Dimensions, feet	165.5 × 34 × 10.5
Guns	1—40 mm AA; 1—20 mm AA
Main engines	2 diesels with electric drive; 1 500 bhp = 12 knots

Built by Penhoët, France, as a US off-shore order. Launched on 28 Sep 1954. Transferred from the US in 1955 under MDAP.

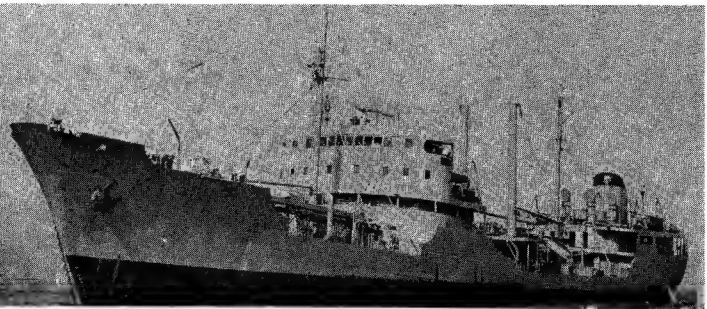


CR 1 1963, Spanish Navy, Official

OILERS

TEIDE	
Displacement, tons	2 747 light; 8 030 full load
Dimensions, feet	385.5 x 48.5 x 20.3
Guns	1—4.1 in
Main engines	2 diesels; 3 360 bhp = 12 knots

Ordered from Factoria de Bazan, Cartegana, in December 1952. Laid down on 11 Nov 1954. Launched on 20 June 1955. In service October 1956.



TEIDE Spanish Navy, Official

LUTON (ex-Campilo)	
Displacement, tons	4 550 light; 7 550 full load
Dimensions, feet	342.5 × 53.8 × 19.5
Main engines	2 sets B & W diesels; 2 600 bhp = 13.5 knots

Built at Valencia. Diesels built at Barcelona. Launched in 1931. Purchased in Dec 1934. A photograph appears in the 1954-55 to 1961-62 editions.

PP 1	PP 2
Displacement, tons	470
Dimensions, feet	138 pp; 147.5 oa × 25 × 9.5
Main engines	Deutz diesel; 220 bhp = 10 knots
Complement	12

Both built at Santander and launched in 1939. Small service tankers.

LANDING CRAFT

3 New Construction. "EDIC" Type

Displacement, tons	279 standard; 665 full load
Dimensions, feet	193.5 × 39 × 10.5
Guns	2—20 mm AA
Main engines	2 diesels; 1 040 bhp = 9.5 knots
Complement	16

Landing craft of the French EDIC type under construction at La Carraca.

TRAINING SHIPS (Buque-Escuela)

JUAN SEBASTIAN DE ELCANO

Displacement, tons	3 420 standard; 3 754 full load
Dimensions, feet	269.2 pp; 308.5 oa × 43 × 23 full load
Guns	2—37 mm
Main engines	1 Sulzer diesel; 1 shaft; 1 500 bhp = 9.5 knots
Oil fuel, tons	230
Endurance, miles	10,000 at 9.5 knots
Complement	224 + 80 cadets

Four-masted schooner. Named after the first circumnavigator of the world (1519-26) who succeeded to the command of the expedition led by Magallanes after the latter's death. Built by Echevarrieta Yard, Cadiz. Launched on 5 Mar 1927. Completed in 1928. A photograph appears in the 1952-53 to 1957-58 editions.

COASTAL LAUNCHES (Lanchas de Vigilancia)

V 2	Displacement, tons	22	Guns: 1—7 mm	Speed: 6.7 knots
V 3	Displacement, tons	10	Guns: 1—7 mm	Speed: 7.5 knots
V 4	Displacement, tons	65	Guns: 1—7 mm	Speed: 9 knots
V 5	Displacement, tons	4.5	Guns: 1—7 mm	Speed: 5 knots
V 7	Displacement, tons	20	Guns: 1—7 mm	Speed: 8.5 knots
V 8	Displacement, tons	26.5	Guns: 1—7 mm	Speed: 7.8 knots
V 9	Displacement, tons	15.6	Guns: 1—7 mm	Speed: 9 knots
V 10	Displacement, tons	11.69	Guns: 1—7 mm	Speed: 9.5 knots
V 11	Displacement, tons	11.69	Guns: 1—7 mm	Speed: 9.5 knots
V 12	Displacement, tons	28	Guns: 1—7 mm	Speed: 7.8 knots
V 13	Displacement, tons	45.1	Guns: 1—7 mm	Speed: 7.8 knots
V 17	Displacement, tons	110.9	Guns: 1—13 mm	Speed: 10.5 knots
V 18	Displacement, tons	116	Guns: 1—13 mm	Speed: 6 knots
V 21	Displacement, tons	16	Guns: 1—13 mm	Speed: 17.6 knots

There are also V 1 and V 6. Coastal launches employed on surveillance and fishery protection duties, lanchos guardapescas, except V 17, rated as patrullero. V 4 is named Alcatraz, V 12 Esturian and V 18 Lanzon. V 19 was officially stricken from the list in 1963, and V 20 in 1965.

TUGS (Remolcadores)

RR 50	Displacement, tons	227	RR 51	RR 52
	Dimensions, feet	91.2 × 23 × 11		
	Main engines	1 shaft; 1 400 shp		

All built at Cartagena for naval service in 1963-66.

RA 4	Displacement, tons	951 standard; 1 069 full load	RA 5	RA 6
	Dimensions, feet	183.5 × 32.8 × 51.8		
	Main engines	2 Sulzer diesels; 3 200 bhp = 15 knots		

All built at La Carraca, in 1963.

RA 1	Displacement, tons	757 standard; 1 039 full load	RA 2
	Dimensions, feet	184 × 33.5 × 12	
	Guns	2 MG	
	Main engines	2 Sulzer diesels; 3 200 bhp = 15 knots	

Ordered in 1949. Built at Factoria de Bazan, Cartagena. Launched on 2 Sep 1954 and 5 Oct 1954, commissioned on 9 July 1955 and 12 Sep 1955, respectively.

RS 3 (ex- <i>Metinda III</i>)	
Displacement, tons	762 standard; 1 080 full load
Dimensions, feet	137 × 33.1 × 15.5
Main engines	Triple expansion; 12 knots max; 10 knots service

RR 15	Displacement, tons	434	RR 16	RR 17
	Dimensions, feet	124 × 27.5 × 10		
	Main engines	800 ihp = 11.5 knots		

RR 11	
Displacement, tons	279
Dimensions, feet	111.5 × 20 × —
Main engines	600 ihp = 11 knots

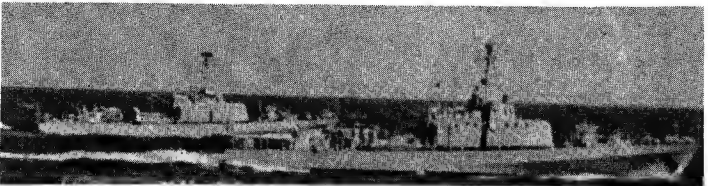
SUDAN

The Navy was established in 1962 to guard the Red Sea coast.

PATROL BOATS

GIHAD PB 1	HORRIYA PB 2	ISTIGLAL PB 3	SHAAB PB 4
Displacement, tons	100		
Dimensions, feet	115 × 16.5 × 5.2		
Guns	1—40 mm AA; 1—20 mm AA; 2—7.6 mm MG		
Main engines	Mercedes-Benz diesels; 2 shafts; 1 800 bhp = 20 knots		
Radius, miles	1 400		
Complement	20 officers and men		

Built by Mosor Shipyard, Trogir, Yugoslavia, in 1961-62. Of steel construction. First craft acquired by the newly established Sudanese Navy. A photograph of Horriya, Istiglal and Shaab in company appears in the 1962-63 to 1965-66 editions and of Gihad in the 1962-63 to 1966-67 editions.



ISTIGLAL and SHAAB

Sudan Navy, Official

ROYAL SWEDISH NAVY

Administration

Commander-in-Chief of the Navy
(including Coast Artillery):
Vice-Admiral Å. F. Lindemalm

President of the Navy Technical and
Administrative Board:
Rear-Admiral A. H. S. Lagerman

Commander-in-Chief of Active Fleet:
Rear-Admiral D. Arvas

Diplomatic Representation

Naval Attaché in London:
Commodore Ulf E. A. Reinius

Naval Attaché in Washington:
Commodore Nils-Gustaf Gynning

Strength of the Fleet

- 22 Submarines (Diesel Powered)
- 1 Cruiser
- 8 Destroyers
- 12 Fast Anti-Submarine Frigates
- 1 Minelayer and Sea Training Ship
- 1 Submarine Support Ship
- 43 Torpedo Boats
- 6 Minesweepers (Steel)
- 18 Coastal Minesweepers (Wooden)
- 19 Inshore Minesweepers
- 10 Mining Tenders
- 1 Staff Communications Ship
- 2 Training Ships
- 24 Patrol Boats
- 12 Surveying Vessels
- 23 Landing Craft
- 5 Icebreakers
- 15 Support Ships and Service Craft

New Construction Programme

- Plan "ÖB-62" comprises:—
- 2 Guided Missile Frigates (ship-to-air)
 - 10 Submarines
 - 12 Motor Torpedo Boats (T 121 type)
 - 20 Motor Gunboats
 - 9 Coastal Minesweepers (M 69 type)

Personnel

1967: Active list of Navy and Coast Artillery,
16,300 officers and men, including conscripts

Navy Estimates

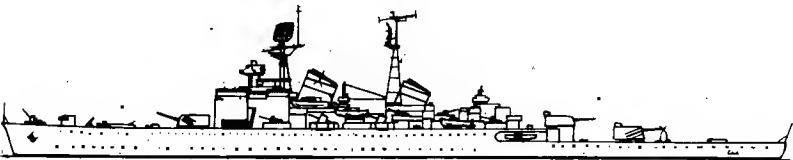
kr.		kr.	
1960-61:	389,500,000	1963-64:	469,000,000
1961-62:	409,000,000	1964-65:	490,250,000
1962-63:	423,000,000	1965-66:	532,770,000
		1966-67:	652,300,000

Mercantile Marine

Lloyd's Register of Shipping:
1,105 vessels of 4,399,641 tons gross

Silhouettes

Scale: 150 feet = 1 inch



GÖTA LEJON



SÖDERMANLAND



ÖSTERGÖTLAND Class



HALLAND Class



ÖLAND



VISBY Class



MALMÖ



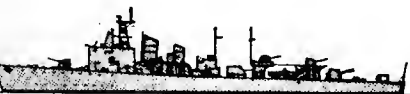
UPPLAND



GÄVLE



MJÖLNER Class



KALMAR



NORRKÖPING



ÄLVSNABBEN

SUBMARINES

New Construction
5 + 5 "Sjöormen" Class

SJÖORMEN	SJÖBJÖRNEN SJÖHÅSTEN	SJÖHUNDEN SJÖLEJONET
Displacement, tons	700 standard; 800 surface; 1 110 submerged	
Length, feet (metres)	167.3 (51)	
Beam, feet (metres)	20 (6.1)	
Draught, feet (metres)	19.7 (6.0)	
Torpedo tubes	21 in (533 mm)	
Main engines	Diesels, electric motors	

Three building by Kockums, two by Karlskrona (now a civilian yard). *Sjöbjörnen* means Seabear, *Sjöormen* Seaserpent, *Sjöhåsten* Seahorse, *Sjöhunden* Seadog, and *Sjölejonet* Sealion. Conning tower letters: Sor, Sbj, She, Shu, Sle.

Five more submarines of a new highly streamlined, long-range type, are included in the new construction programme. They will be conventional but with engines enabling them to stay submerged for a long time.

6 "Draken" Class

Name	Builders	Launched	Completed
DELFINEN	Kockums	7 Mar 61	7 June 62
DRAKEN	Kockums	1 Apr 60	4 Apr 62
GRIPEN	Karlskrona	31 May 60	28 Apr 62
NORDKAPAREN	Kockums	8 Mar 61	4 Apr 62
SPRINGAREN	Kockums	31 Aug 61	7 Nov 62
VARGEN	Kockums	20 May 60	15 Nov 61

Displacement, tons	770 standard; 835 surface
Length, feet (metres)	229.7 (70)
Beam, feet (metres)	16.7 (5.1)
Draught, feet (metres)	16.7 (5.1)
Torpedo tubes	4—21 in (533 mm) bow
Main engines	Diesels; electric motors
Speed, knots	16.75 on surface; 25 submerged

DIVING. These six submarines have fast-diving capabilities.

NOMENCLATURE. *Draken* means Dragon, *Gripen* Griffon, *Vargen* Wolf.

APPEARANCE. Distinctive letters painted on the conning tower are: Del. *Delfinen*; Dra. *Draken*; Gri. *Gripen*; Nor. *Nordkaparen*; Spr. *Springaren*; Vgn. *Vargen*.

PHOTOGRAPHS. A photograph of *Draken* appears in the 1962-63 to 1964-65 editions.

6 "Hajen" Class

Name	Builders	Launched	Completed
BÄVERN	Kockums	11 Dec 1954	1956
HAJEN	Karlskrona	21 Apr 1955	1957
ILLERN	Kockums	3 Oct 1955	1957
SÄLEN	Kockums	14 Nov 1957	1959
UTTERN	Kockums	3 Feb 1958	1959
VALEN	Kockums	14 Nov 1958	1960

Displacement, tons	720 standard; 785 surface
Length, feet (metres)	216.5 (64.5)
Beam, feet (metres)	16.7 (5.1)
Draught, feet (metres)	14.8 (4.5)
Guns, AA	1—20 mm
Torpedo tubes	4—21 in (533 mm) bow (8 torpedoes)
Main engines	SEMT-Pielstick diesels; 1 700 bhp; Electric motors; electric drive on surface
Speed, knots	16 on surface, 20 submerged
Complement	44

All built by Kockums Mekaniska Verkstads Aktiebolag, Malmö, except *Valen* built by the Royal Swedish Naval Dockyard, Karlskrona.

OPERATIONAL. Equipped with Schnorkel, and have fast-diving capabilities.

NOMENCLATURE. *Bävern* means Beaver, *Hajen* Shark, *Illern* Polecat, *Sälen* Seal, *Uttern* Otter and *Valen* Whale.

APPEARANCE. Distinctive letters painted on the conning tower are: Bav, *Bävern*; Haj, *Hajen*; Ilin *Illern*; Sal, *Sälen*; Utn, *Uttern*; Val, *Valen*.

PHOTOGRAPHS. A photograph of *Hajen* appears in the 1957-58 to 1959-60 editions, of *Bävern* in the 1960-61 to 1965-66 editions, of *Illern* in the 1964-65 to 1966-67 editions.

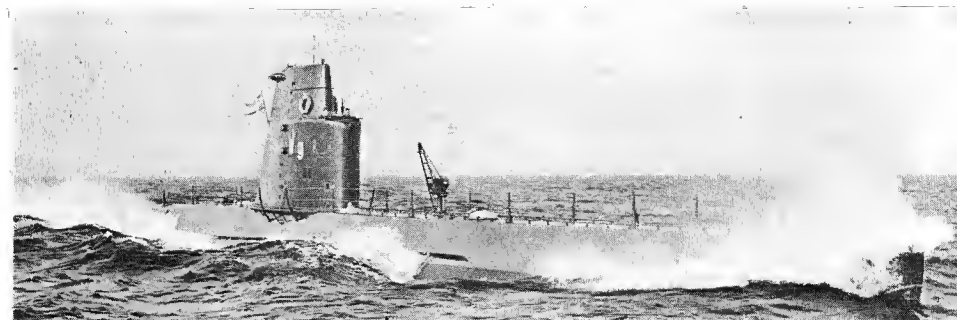
DISPOSALS. Of the nine old submarines of the "Sjölejonet" class, *Dykaren* (Diver), *Sjöborren* (Seaurchin), *Sjöhunden* (Seadog), *Sjölejonet* (Sealion) and *Svärdfisken* (Swordfish) were stricken in 1960 and scrapped; and *Sjöbjörnen* (Seabear), *Sjöhåsten* (Seahorse), *Sjöormen* (Seaserpent) and *Tumlaren* (Porpoise) were discarded on 1 Jan 1964.

The three old submarines of the "Najad" class, *Nacken* (Neck), *Najad* (Naiad) and *Neptun* (Neptune) were discarded in 1967, it is officially stated.



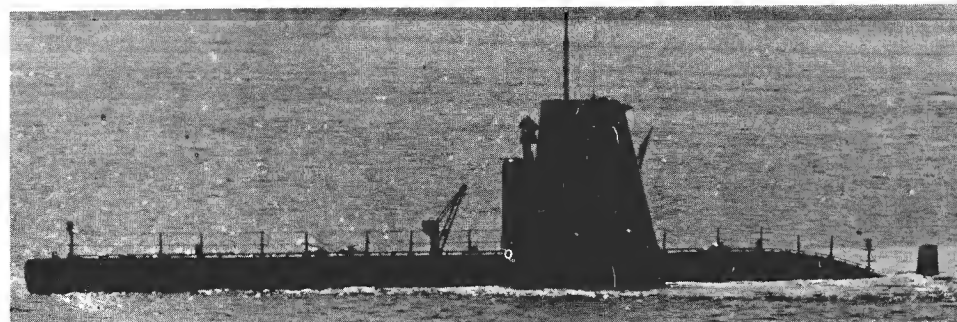
SJÖORMEN

1967, Royal Swedish Navy, Official



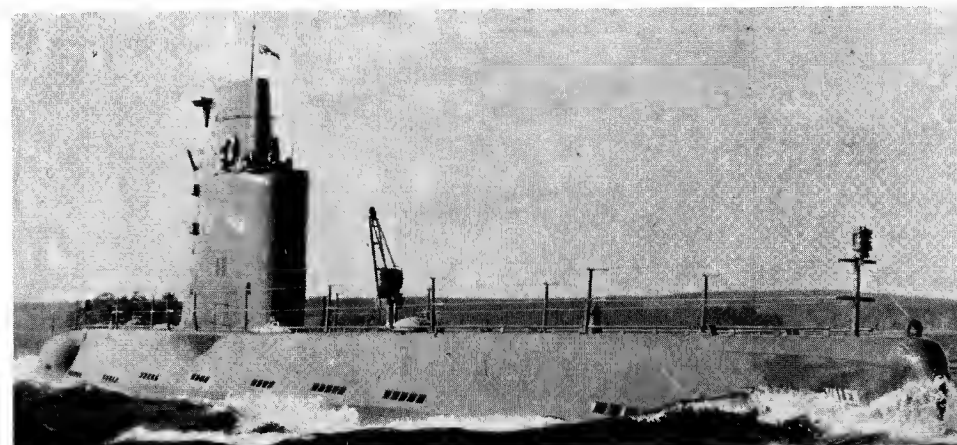
VARGEN

1965, Royal Swedish Navy, Official



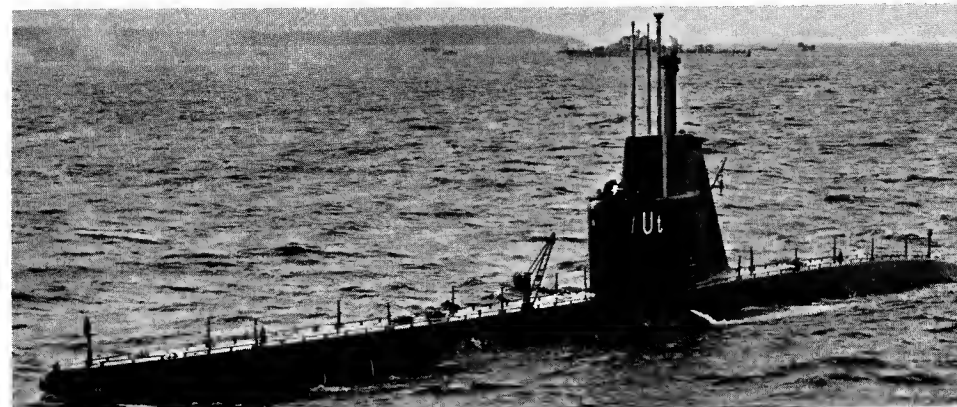
GRIPEN

1967, Royal Swedish Navy, Official



VALEN

1967, Royal Swedish Navy, Official



UTTERN

1966, Royal Swedish Navy, Official

Submarines—continued

6 "Abborren" Class

ABBORREN (ex-U5) **LAXEN** (ex-U8)
FORELLEN (ex-U4) **MAKRILLEN** (ex-U9)
GÄDDAN (ex-U7) **SIKEN** (ex-U6)

Displacement, tons 420 standard; 430 surface;
 460 submerged
Length, feet (*metres*) 164 (50-0)
Beam, feet (*metres*) 17-5 (5-3)
Draught, feet (*metres*) 17-5 (5-3)
Torpedo tubes 4—21 in (533 mm) 3 bow and
 1 stern
Main engines 2 MAN diesels, total 1 500 hp
 Electric motor, 750 hp
Speed, knots 14 on surface; 9 submerged
Complement 23

All were built by Kockums Mek. Verkstads, Malmö (U 4, 5 June 1943, U 5, 8 July 1963, U 6, 18 Aug 1943, U 7, 23 Nov 1943), and by Karlskrona Naval Dockyard (U 8, 25 Apr 1944, U 9, 23 May 1944) (original launch dates). Reconstructed in 1960-64. Launching dates after reconstruction: *Abborren* 1962, *Makrillen* 1963, *Forellen* 1963, *Laxen* 1964, *Gäddan* 1963, *Siken* 1964. All have been streamlined. Officially rated as *Kustubåta* (coastal submarines). Distinctive letters Abb, For, Gad, Lax, Mak, Sik.

DISPOSALS. Of three sister boats, U 1 was scrapped in 1961, U2 was for sale in 1962, and U 3 in 1964.

1 Ex-British "Midget" Type

SPIGGEN (Ex-*Stickleback*, X 51)

Displacement, tons 36 surface; 41 submerged
Length, feet (*metres*) 50-7 (15-5) pp, 53-9 (16-4) oa
Beam, feet (*metres*) 6-3 (1-9)
Draught, feet (*metres*) 7-5 (2-3)
Main engines Perkins 6-cyl diesels
 Electric motors
Speed, knots 7 on surface; 6 submerged
Complement 5

Former British X-craft. Built by Vickers-Armstrongs Ltd, Barrow. Launched on 1 Oct 1954. Refitted in 1957-58. Purchased from Great Britain on 15 July 1958. Distinctive letters: Spg. "Spiggen" means "Stickleback"

1 "Tre Kronor" Class

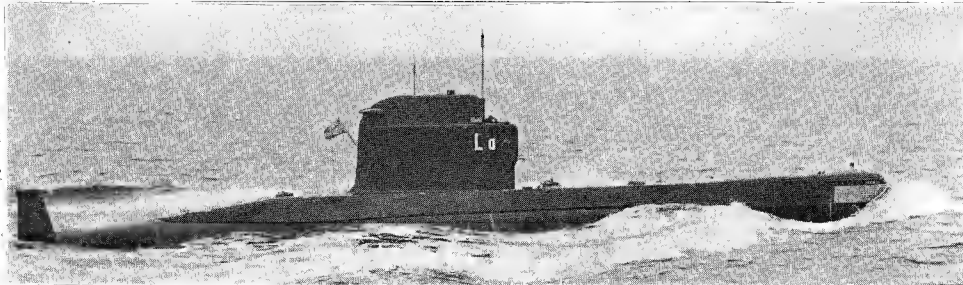
Displacement, tons 8 200 standard; 9 200 full load
Length, feet (*metres*) 571 (174-0) pp, 590-5 (180-0) wl
 597 (182-0) oa
Beam, feet (*metres*) 54 (16-5)
Draught, feet (*metres*) 19-5 (6-0) mean; 21-5 (6-6) max
Guns, surface 7—6 in (150 mm) 53 cal.
Guns, AA 4—57 mm Bofors; 11—40 mm
 Bofors
Armour Exceptionally strong, 3 in—5 in
 (75—125 mm)
Boilers 4 Swedish 4-drum type
Main engines 2 sets De Laval geared turbines
 100 000 shp; 2 shafts
Speed, knots 33
Complement 610

Cost was estimated at 74 000 000 kronor. Radar control arrangements were installed for 6-inch guns. Fitted for minelaying with a capacity of 120 mines. Reconstructed in 1951-52. Modernised in 1958, with new radar, 57 mm guns, etc.



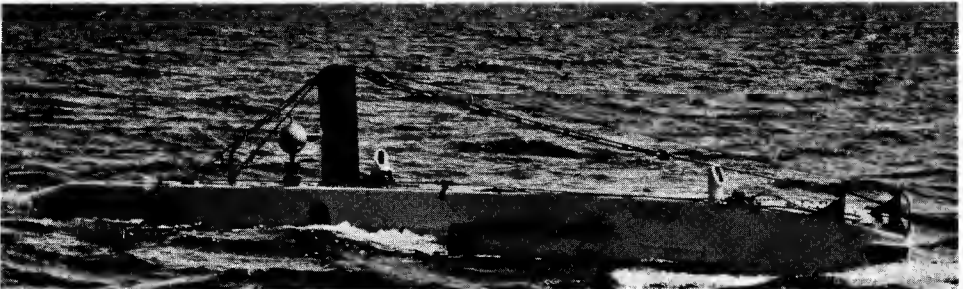
ABBORREN

1967, Royal Swedish Navy, Official



LAXEN

1965, Royal Swedish Navy, Official

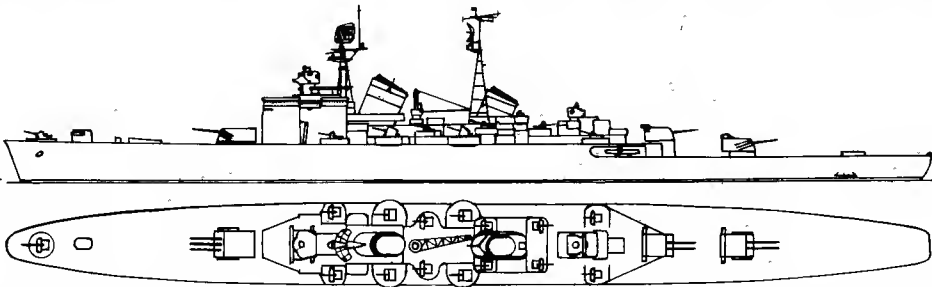


SPIGGEN

1966, Royal Swedish Navy, Official

CRUISERS (*Kryssare*)

Name	Builders	Laid down	Launched	Completed
GÖTA LEJON	Eriksberg Mekaniska Verkstad, Göteborg	27 Sep 1943	17 Nov 1945	15 Dec 1947

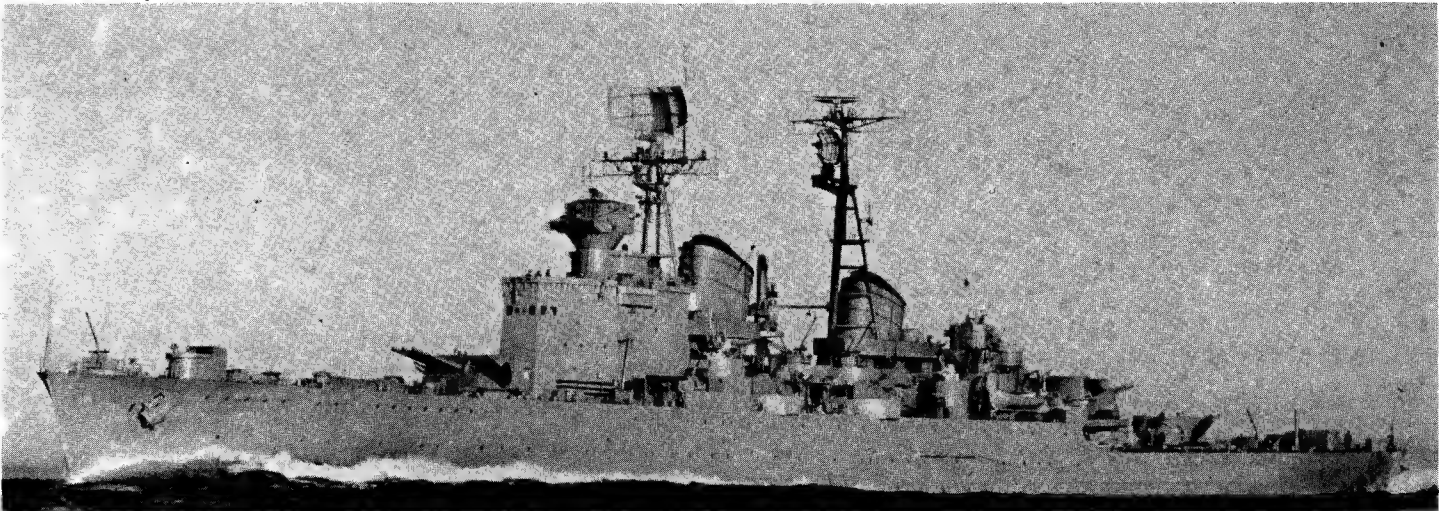


DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.

GUNNERY. The 6 inch guns are high angle automatic anti-aircraft weapons with an elevation of 70 degrees. The 9—25 mm AA formerly mounted were suppressed in 1951 and 7—40 mm AA added.

APPEARANCE. Light tripod masts have been stepped as shown in photo. Enclosed tower bridge structure.

DISPOSALS. Sister ship *Tre Kronor* was discarded on 1 Jan 1964. The old anti-aircraft cruiser *Gotland* was sold in 1961.



GÖTA LEJON

1966, Royal Swedish Navy, Official

DESTROYERS (Jagare)

4 "Östergötland" Class

Displacement, tons 2 150 standard; 2 600 full load
Length, feet (metres) 367.5 (112.0) pp; 380 (115.8) oa
Beam, feet (metres) 36.8 (11.2)
Draught, feet (metres) 12 (3.7)
Missiles, AA "Seacat" in Gästrikland and Södermanland
Guns, surface 4—4.7 in (120 mm)
Guns, AA Östergötland: 7—40 mm
Hälsingland: 5—40 mm
Others: 4—40 mm
A/S Triple-barrelled DC mortar
Torpedo tubes 6—21 in (533 mm)
Mines 60 can be carried
Boilers 2 Babcock & Wilcox
Main engines De Laval turbines
40 000 shp; 2 shafts
Speed, knots 35
Radius, miles 2 200 at 20 knots
Oil fuel (tons) 330
Complement 244

These ships have improved anti-aircraft defence and anti-submarine weapons of the Bofors type.

PHOTOGRAPHS. A photograph of Östergötland appears in the 1962-63 to 1965-66 editions and of Hälsingland in the 1965-66 and 1966-67 editions.

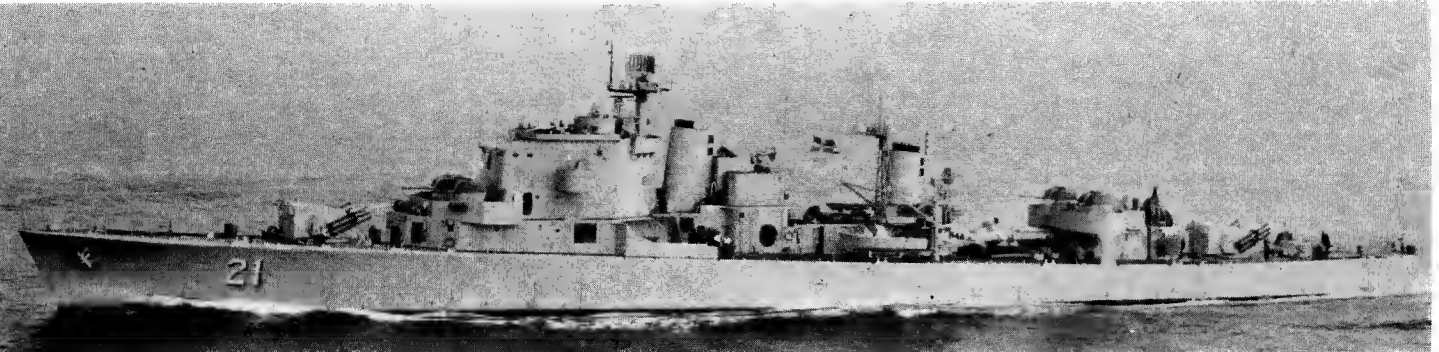
Name	No.	Builders	Laid down	Launched	Completed
GÄSTRIKLAND	J 22	Götaverken, Göteborg	1 Oct 1955	6 June 1956	14 Jan 1959
HÄLSINGLAND	J 23	Kockums Mek Verkstads A/B	1 Oct 1955	14 Jan 1957	17 June 1959
ÖSTERGÖTLAND	J 20	Götaverken, Göteborg	1 Sep 1955	8 May 1956	3 Mar 1958
SÖDERMANLAND	J 21	Eriksberg Mekaniska Verkstad	1 June 1955	28 May 1956	27 June 1959



GÄSTRIKLAND

1967, Royal Swedish Navy, Official

MODERNISATION. Södermanland was modernised in 1962, and Gästrikland and Östergötland in 1963. PENNANT NUMBERS. J (for Jagare) painted on bows with number in 1966.



SÖDERMANLAND

1966, Skyfotos

2 "Halland" Class

Displacement, tons 2 650 standard; 3 200 full load
Length, feet (metres) 380.5 (116.0) wl; 397.2 (121.0) oa
Beam, feet (metres) 41.3 (12.6)
Draught, feet (metres) 14.8 (4.5)
Missiles, surface 1 rocket launcher
Guns, dual purpose 4—4.7 in (120 mm)
Guns, AA 2—57 mm; 6—40 mm
A/S 2 four-barrelled DC mortars
Torpedo tubes 8—21 in (533 mm)
Mines Can be fitted for minelaying
Boilers 2
Main engines De Laval double reduction geared turbines; 58 000 shp; 2 shafts
Speed, knots 35
Radius, miles 3 000 at 20 knots
Oil fuel (tons) 500
Complement 290

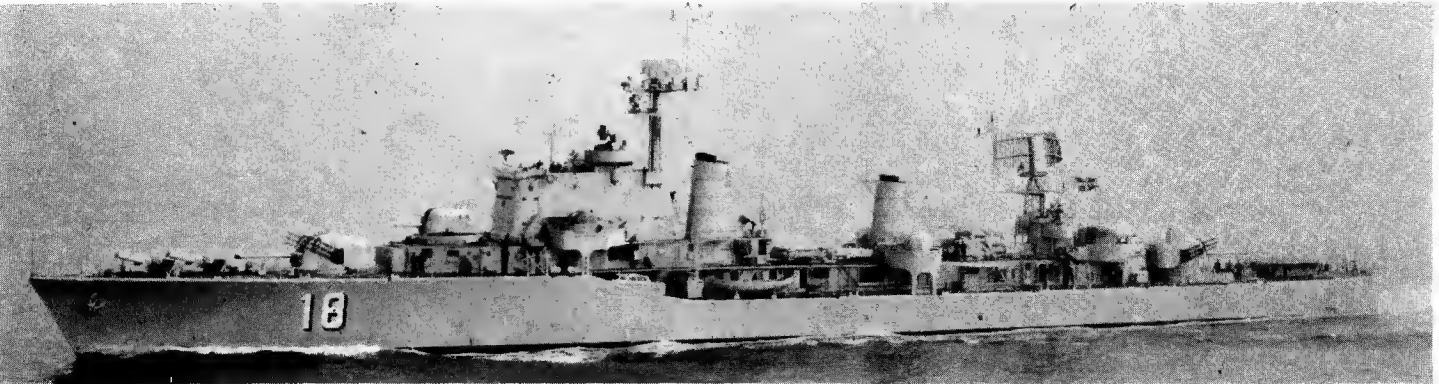
Both ordered in 1948. The first Swedish destroyers of post-war design and construction. These large destroyers have fully automatic gun turrets forward and aft, ahead throwing anti-submarine weapons of the Bofors type, forward and ship-to-ship guided missiles launcher abaft the after funnel.

Name	No.	Builders	Laid down	Launched	Completed
HALLAND	J 18	Götaverken, Göteborg	1951	16 July 1952	8 June 1955
SMALAND	J 19	Eriksberg Mekaniska Verkstad, Göteborg	1951	23 Oct 1952	12 Jan 1956



SMALAND

1966, Royal Swedish Navy, Official



HALLAND

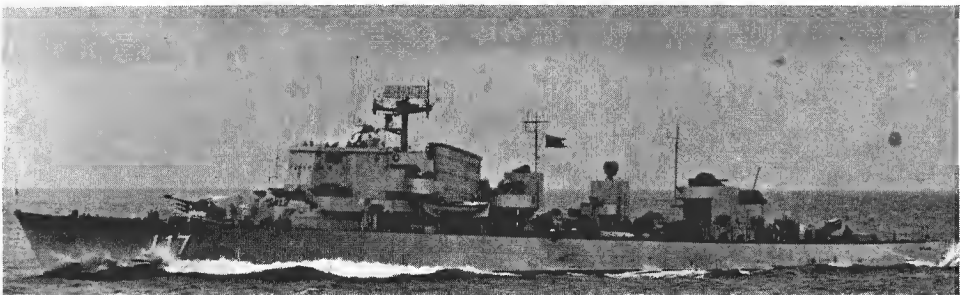
1966, Skyfotos

Destroyers—continued

2 "Öland" Class

Name	No	Builders	Laid down	Launched	Completed	Modernised
ÖLAND	J16	Kockums Mek Verkstads A/B, Malmö	1943	15 Dec 1945	5 Dec 1947	1960
UPPLAND	J17	Karlskrona Dockyard	1943	5 Nov 1946	31 Jan 1949	1963

Displacement, tons 2 000 standard, 2 400 full load
Length, feet (metres) 351 (107.0) pp, 364.2 (111.0) oa
Beam, feet (metres) 36.8 (11.2)
Draught, feet (metres) 11.2 (3.4)
Guns, dual purpose 4—4.7 in (120 mm)
Guns, AA 6—40 mm
A/S weapons 1 triple-barrelled depth charge mortar
Torpedo tubes 6—21 in (533 mm) tripled
Mines 60
Boilers 2 Penhoët
Main engines De Laval geared turbines
44 000 shp, 2 shafts
Speed, knots 35
Radius, miles 2 500 at 20 knots
Oil fuel (tons) 300
Complement 210



UPPLAND

1967, Royal Swedish Navy, Official

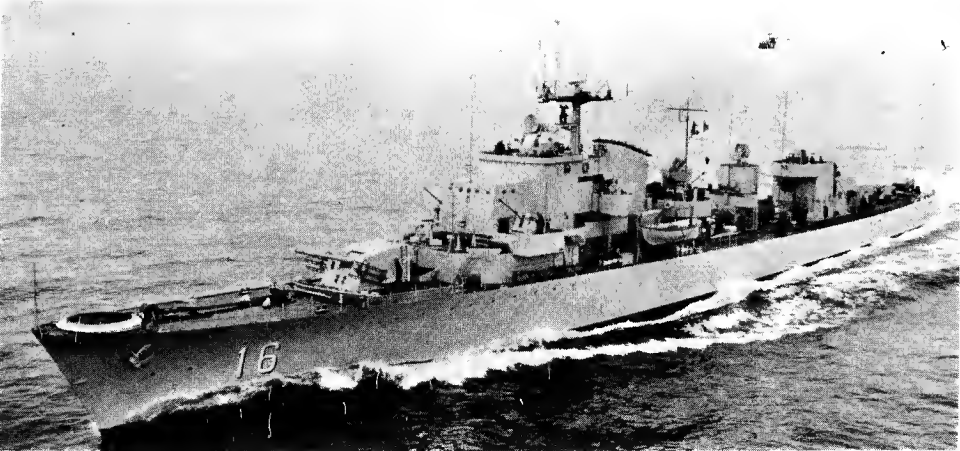
The superstructure and machinery spaces are lightly armoured. Fitted for minelaying.

GUNNERY. The 4.7 inch guns are semi-automatic with an elevation of 80 degrees. The 40 mm AA gun near the jackstaff was removed in 1962, and the eight 20 mm AA guns were suppressed in 1964.

RECONSTRUCTION. Öland was modernised in 1960 with a new bridge, and Uppland was modernised with a new bridge and a helicopter platform in 1963, see new photograph.

PENNANT NUMBERS. J (for Jagare) painted on bows with number in 1966.

PHOTOGRAPHS. A port near broadside view of Uppland before reconstruction, appears in the 1955-56 to 1961-62 editions, a starboard bow near broadside view of Öland in the 1962-63 to 1965-66 editions, and a starboard bow surface view of Uppland in the 1965-66 and 1966-67 editions.



ÖLAND

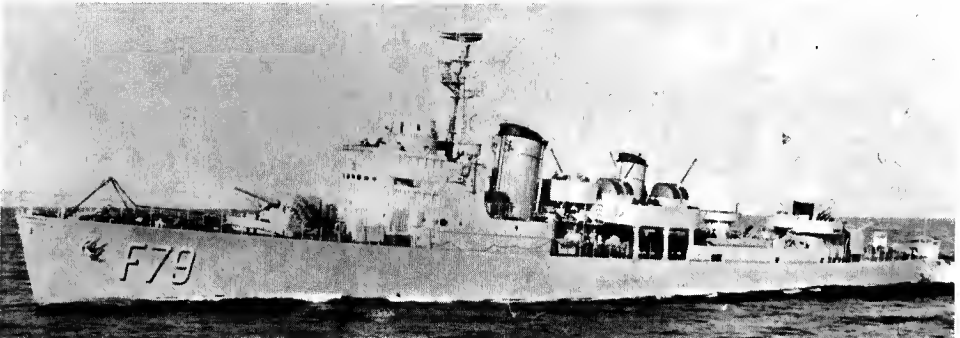
1966, Royal Swedish Navy, Official

FAST ANTI-SUBMARINE FRIGATES (ex-Destroyers) Rated as Fregatter

3 "Göteborg" Class

Name	No.	Builders	Launched	Completed	Converted
GÄVLE	F 80	Götaverken	25 Sep 1940	1941	1961
KARLSKRONA	F 79	Karlskrona	16 June 1939	1940	1963
MALMÖ	F 78	Eriksberg	22 Sep 1938	1939	1962

Displacement, tons 1 250 (Malmö 1 150) standard; 1 400 (Malmö 1 300) full load
Length, feet (metres) 304 (92.7) wl; 310.5 (94.6) oa
Beam, feet (metres) 29.5 (9.0); Malmö 28 (8.5)
Draught, feet (metres) 12.5 (3.8)
Guns, dual purpose 3—4.7 in (120 mm); Malmö 2—4.7 in (120 mm)
Guns, AA 4—40 mm
A/S 2 triple-barrelled depth charge mortars
Torpedo tubes 6—21 in (533 mm) tripled, in Malmö only
Boilers 3 Penhoët
Main engines De Laval geared turbines
32 000 shp, 2 shafts
Speed, knots 39
Radius, miles 1 200 at 20 knots
Oil fuel (tons) 150
Complement 130



KARLSKRONA

1967, Royal Swedish Navy, Official

Former torpedo boat destroyers. Originally carried 20 to 60 mines. All refitted for anti-submarine warfare, and officially reclassified as frigates on 1 Jan 1961.

RECONSTRUCTION. As converted into fast anti-submarine escorts these ships have their close range anti-aircraft guns mounted on a bandstand enveloping the after funnel. Gävle was reconstructed in 1961, Malmö in 1962, and Karlskrona in 1963.

CONVERSION. It was officially stated that the Göteborg class would not be radically rebuilt, as it was originally intended, although they have already undergone some modification, bringing them near the frigate type.

PENNANT NUMBERS. F (for Fregatter) painted on bows with number in 1966.



MALMÖ (as converted with only two 4.7 inch guns)

1963, Royal Swedish Navy, Official

PHOTOGRAPHS. A port broadside view of Malmö before reconstruction appears in the 1956-57 to 1960-61 editions, a port broadside view of Gävle as converted to fast anti-submarine frigate in the 1959-60 to 1963-64 editions, and a port dead broadside surface view of Karlskrona in the 1964-65 to 1966-67 editions.

DISPOSALS
Of this class Norrköping was discarded in 1967, Stockholm on 1 Jan 1964, and Göteborg in 1958. The old destroyers Ehrensköld and Nordensköld were discarded on 1 Apr 1963. The older destroyer Klas Horn was discarded in 1958.

Fast Anti-Submarine Frigates—continued

4 "Visby" Class

Name	No.	Builders	Launched	Completed
HÄLSINGBORG	13	Götaverken	23 Mar 43	1943
KALMAR	14	Eriksberg	20 July 43	1944
SUNDSVALL	F 12	Eriksberg	20 Oct 42	1943
VISBY	F 11	Götaverken	16 Oct 42	1943

Displacement, tons	1 150 standard; 1 320 full load
Length, feet (metres)	310 (94.5) wl; 320 (97.5) oa
Beam, feet (metres)	30 (9.1)
Draught, feet (metres)	12.5 (3.8)
Aircraft	Nos. 11, 12: 1 helicopter
Guns, dual purpose	Nos. 13, 14: 3—4.7 in (120 mm)
Guns, AA	Nos. 11, 12: 2—57 mm; Nos. 13, 14: 3—40 mm
A/S	1 four-barrelled DC mortar
Torpedo tubes	Nos. 13 and 14: 5—21 in (533 mm) quintupled
Boilers	3 three-drum type
Main engines	De Laval geared turbines 36 000 shp; 2 shafts
Speed, knots	39
Radius, miles	1 600 at 20 knots
Oil fuel (tons)	150
Complement	140

Former destroyers, *Kalmar* was laid down on 16 Nov 1942, and *Visby* on 29 Apr 1942. All were originally fitted for minelaying.



SUNDSVALL

1967, Royal Swedish Navy, Official

RECLASSIFICATION. Officially re-rated as frigates on 1 Jan 1965.
PENNANT NUMBERS. F (for *Fregatter*) painted on bows of *Sundsvall* and *Visby* with number in 1966.

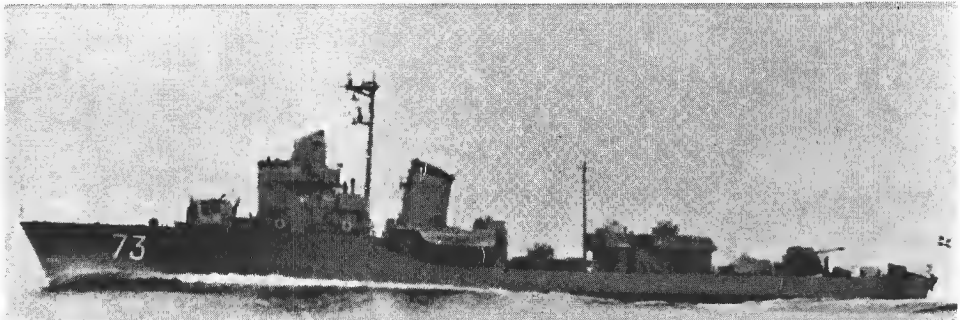
PHOTOGRAPHS. A photograph of *Visby* appears in the 1951-52 and 1952-53 editions, of *Kalmar* in the 1962-63 to 1966-67 editions, and of *Hälsingborg* in the 1963-64 to 1966-67 editions.

2 "Mjolner" Class

Name	No.	Builders	Launched	Completed
MODE	73	Götaverken	11 Apr 1942	1955
MUNIN	75	Öresundsvarvet	27 May 1942	1955

Displacement, tons	760 standard; 960 full load
Length, feet (metres)	243.8 (74.3) wl; 256 (78.0) oa
Beam, feet (metres)	26.2 (8.0)
Draught, feet (metres)	7.5 (2.3)
Guns, dual purpose	2—4.1 in (105 mm)
Guns, AA	2—40 mm
A/S	2 DCT
Boilers	2 three-drum type
Main engines	2 sets De Laval geared turbines 16 000 shp; 2 shafts
Speed, knots	30
Radius, miles	1 260 at 20 knots
Oil fuel (tons)	190
Complement	100

Both laid down in Sep 1941 and completed in 1942. Formerly rated as seagoing torpedo boats or coastal destroyers (*kustjagare*). Originally fitted for minelaying, but converted into fast anti-submarine frigates and the 3—21 inch torpedo tubes removed.



MODE

Royal Swedish Navy, Official

PHOTOGRAPHS. A photograph of *Munin* appears in the 1956-57 to 1959-60 editions.

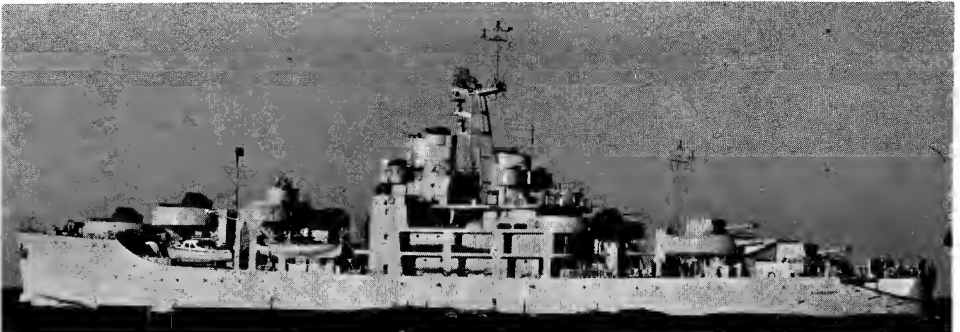
DISPOSALS. Sister ships *Magne* and *Mjolner* were officially deleted from the list in 1967.

MINELAYER (*Minfartyg*) Cadets' Seagoing Training Ship

ÄLVSNABBEN

Displacement, tons	4 250 standard;
Length, feet (metres)	317.5 (96.8) wl; 334.7 (102.0) oa
Beam, feet (metres)	44.5 (13.5)
Draught, feet (metres)	16 (4.9)
Guns, surface	2—6 in (152 mm)
Guns, AA	2—57 mm Bofors; 2—40 mm
Main engines	Diesels; 1 shaft
Speed, knots	14
Complement	255

Built on a mercantile hull by Eriksberg Mekaniska Verkstad Göteborg. Laid down in Oct 1942, launched on 19 Jan 1943, completed in Apr 1943. Employed as a training ship during 1953-58, and relieved the anti-aircraft cruiser *Gotland* as Cadet's Seagoing Training Ship in 1959. Re-armed in 1961. Formerly carried 4—6 inch, 8—40 mm AA, 6—20 mm AA.



ÄLVSNABBEN

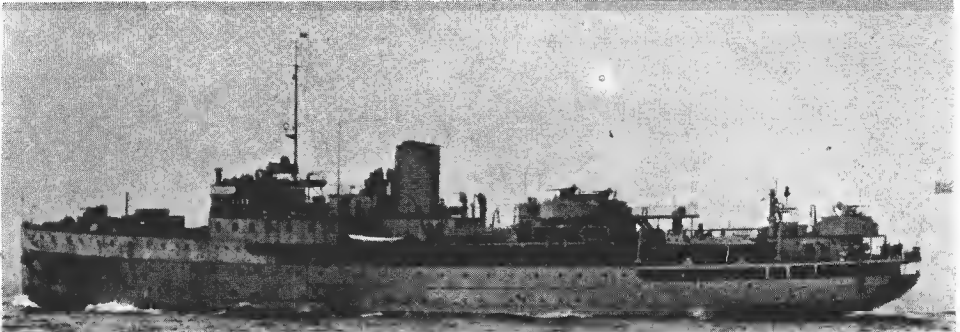
1966, Royal Swedish Navy, Official

SUBMARINE DEPOT SHIP (*Ubåts depåfartyg*)

PATRICIA (ex-*Patris II*)

Displacement, tons	4 950 standard;
Length, feet (metres)	335 (102.0)
Beam, feet (metres)	47.5 (14.5)
Draught, feet (metres)	20 (6.0)
Guns, AA	8—40 mm; 2—20 mm
Boilers	2 oil fired
Main engines	Triple expansion; 2 shafts; 2 900 ihp
Speed, knots	15
Complement	Accommodation for 500

Former Swedish-Lloyd merchant liner. Built by Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne. Launched and completed in 1926. Acquired in 1940. She was reconstructed to increase the accommodation for about 500 men and to maintain and administer nine submarines.



PATRICIA

1966, Royal Swedish Navy, Official

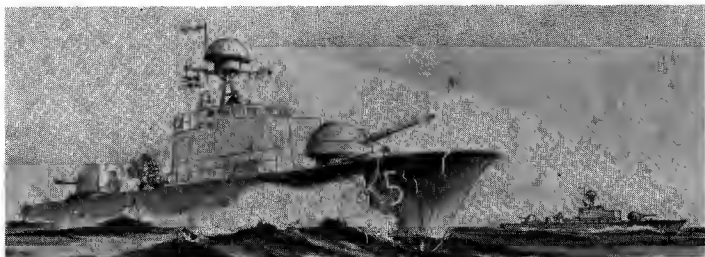
GUNBOATS (Motorkanonbåtar)

8 New Construction

K 1 K 2 K 3 K 4 K 5 K 6 K 7 K 8

Displacement, tons 120 standard; 170 full load
Guns 1—3 in (75 mm); 1—40 mm
Guided weapons Light rocket launchers
Main engines Diesels; speed = 25 knots

Heavily armed patrol craft of the gunboat type (kanonbåt) scheduled under the new programme, for use in narrow waters. Robust and seaworthy. Radar directed fire control, minelaying facilities, and propensity for anti-submarine operations.



NEW MG8 1967, Royal Swedish Navy, Official

TORPEDO BOATS (Motortorpedbatar)

6 + 6 New Construction, Heavy Type

CAPELLA 123 SIRIUS 122 VEGA 125 T 127 T 129 T 131
CASTOR 124 SPICA 121 VIRGO 126 T 128 T 130 T 132

Displacement, tons 190 standard; 200 normal
Dimensions, feet 139.5 hull; 141 oa x 23.3
Guns 1—57 mm Bofors AA
Tubes 6—21 in (single, fixed)
Guided weapons Light rocket launchers
Main engines 3 Bristol Siddeley Proteus 1274 gas turbines; 3 shafts
12 720 shp = 40 knots
Complement 28 (4 officers, 3 warrant officers, 7 petty officers, 14 ratings)

The lead vessel of a class of six, constituting the first group, *Spica* was completed in 1966 by Götaverken, Göteborg, who shared the contract for the series with Karlskronavarvet. The largest craft of their type. Designed to operate in areas contaminated by nuclear fall-out. *Sirius* and *Capella* built by Götaverken; *Castor*, *Vega* and *Virgo* by Karlskronavarvet. Six more projected.

GUNNERY. The 57 mm gun is in a power operated turret controlled by a radar equipped director, with a 57 mm rocket flare projector placed before, and a 10.3 mm launcher on each side, of the totally enclosed bridge. The turret is mounted in the centre of a long foredeck to give wide and clear arcs of fire.



SPICA 1966, Royal Swedish Navy, Official

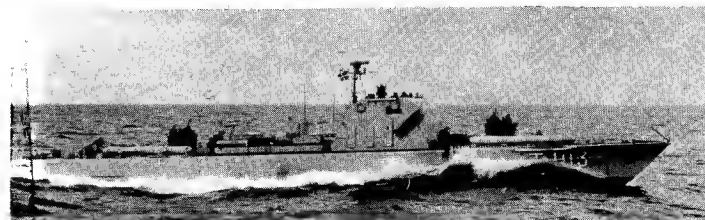
12 M.T.B.—M.G.B. Convertibles

ALDEBARAN T 107 ARGO T 111 POLARIS T 103
ALTAIR T 108 ASTREA T 112 POLLUX T 104
ANTARES T 109 PERSEUS T 101 REGULUS T 105
ARCTURUS T 110 PLEJAD T 102 RIGEL T 106

Displacement, tons 155 (*Perseus* 145) standard; 170 full load
Dimensions, feet 157.5 x 18.3 (*Perseus* 147.7 x 19)
Guns 2—40 mm Bofors AA
Tubes 6—21 in (2 forward, 4 aft); *Perseus* 4—21 in
Main engines 3 Mercedes-Benz diesels; 3 shafts; 9 000 bhp = 37.5 knots
(*Perseus*; Proteus gas turbines, 7 800 shp = 37 knots)
Range, miles 600 at 30 knots
Complement 33

Perseus, built at Karlskrona, was launched in 1950, and completed in 1951, the first of a new convertible type of motor torpedo boat and motor gunboat of experimental design, re-engined with Götaverken machinery to give much greater power. She differs slightly in appearance from the other boats of this group, but her funnel has been removed. The remaining eleven, built at Lurssen, Vegesack, were launched between 1954 and 1959 and all completed by 1960.

PHOTOGRAPHS. Photographs of *Perseus* appear in the 1951-52 to 1953-54 editions, of *Plejad* emerging from camouflaged nuclear bomb-proof shelter in the 1962-63 to 1964-65 editions, and of *Antares* in the 1960-61 to 1964-65 editions.



POLARIS 1965, Royal Swedish Navy, Official

Torpedo Boats—continued

15 "T 42" Type

T 42 T 45 T 48 T 51 T 54
T 43 T 46 T 49 T 52 T 55
T 44 T 47 T 50 T 53 T 56

Displacement, tons 40 standard
Dimensions, feet 75.5 x 17 x 5
Guns 1—40 mm 8ofors AA
Tubes 2—21 in
Main engines Diesels; speed = 40 knots

Built by Kockums Mekaniska Verkstads Aktiebolag, Malmö. All launched between 1956 and 1959 and completed by 1960.

PHOTOGRAPHS. A photograph of T 56 appears in the 1964-65 to 1966-67 editions.



T 42 1967, Royal Swedish Navy, Official

T 41

Displacement, tons 40 standard
Dimensions, feet 75.5 x 18.8 x 6
Guns 1—40 mm Bofors AA
Tubes 2—21 in
Main engines Diesels; speed = 40 knots

Provided under the 1952 Programme. Built by Kockums Mekaniska Verkstad Aktiebolag, Malmö. Launched and completed in 1952.



T 41 Royal Swedish Navy, Official

9 Medium Type

T 32 T 34 T 36 T 38 T 40
T 33 T 35 T 37 T 39

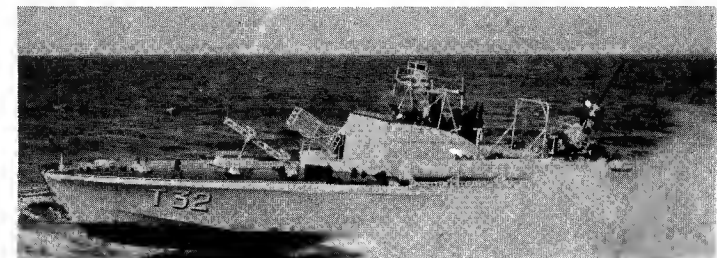
Displacement, tons 40 standard
Dimensions, feet 76 x 17 x 4.5
Guns 1—40 mm Bofors AA; 2 MG
Tubes 2—21 in
Main engines Diesels; Speed 45 knots

Launched in 1950-52. Of improved T 31 design. Built by Kockums Mekaniska Verkstads Aktiebolag, Malmö. Of all welded steel construction.

PHOTOGRAPHS. A photograph of T 38 appears in the 1953-54 to 1962-63 editions, and of T 40 in the 1963-64 to 1966-67 editions.

DISPOSALS

Of the small type of motor torpedo boats. T 21, T 22, T 23, T 24, T 25, T 26 and T 27 were scrapped in 1959, and T 28, T 29, T 30 and T 31 were scrapped in 1960. The older motor torpedo boats, T 15, T 16, T 17 and T 18 were discarded in 1957.



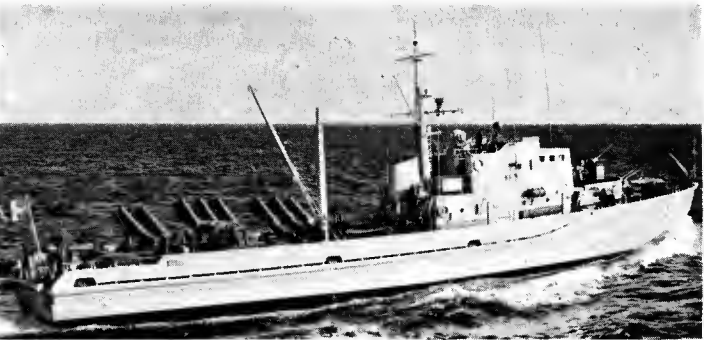
T 32 1967, Royal Swedish Navy, Official

COASTAL MINESWEEPERS
12 "Arko" Class

ARKÖ M 57	HASSLÖ M 64	NÄMDÖ M 67	STYRSÖ M 61
ASPÖ M 63	IGGÖ M 60	SKAFTÖ M 62	VÄLLÖ M 66
BLIDÖ M 68	KARLSÖ M 59	SPÄRÖ M 58	VINÖ M 65

Displacement, tons	300 standard
Dimensions, feet	131 pp; 144.5 oa × 23 × 8
Guns	1—40 mm AA
Main engines	Mercedes-Benz diesels; 2 shafts; 2 000 bhp = 14.5 knots

Of wooden construction. Basically similar to the "Hanö" class below. There is a small difference in the deck-line between M 57-59 and M 60-68. *Arko* was launched on 21 Jan 1957. *Arkö*, *Karlsö* and *Spärö* were completed in 1957. *Iggö* in 1960, *Skaftö* in 1961. *Aspö*, *Haasö*, *Vinö* and *Styrsö* in 1962. *Vällö* in 1963, and *Blidö* and *Nämdö* in 1964. Six more are in the new construction programme. A photograph of *Arkö* appears in the 1959-60 to 1965-66 editions.



ASPÖ 1966, Royal Swedish Navy, Official

6 "Hanö" Class

HANÖ M 51	STURKÖ M 54	TJURKÖ M 53
ORNÖ M 55	TÄRNÖ M 52	UTÖ M 56

Displacement, tons	270 standard
Dimensions, feet	131.2 × 23 × 8
Guns	2—40 mm AA
Main engines	Diesels; 2 shafts; 2 400 bhp = 14.5 knots

All the minesweepers of this class were built at Karlskrona and launched in 1953. A photograph of *Arno* appears in the 1963-64 to 1966-67 editions.



HANÖ 1967, Royal Swedish Navy, Official

MINING TENDERS (*Minutlaggare*)

MUL 12 (1952)	MUL 14 (1953)	MUL 16 (1956)	MUL 18 (1956)
MUL 13 (1952)	MUL 15 (1953)	MUL 17 (1956)	MUL 19 (1956)

Displacement, tons	245 standard
Dimensions, feet	102.3 × 25 × 10.2
Guns	1—40 mm
Main engines	1 Diesel-electric; 360 bhp = 10.5 knots

Launch dates above. Completed in 1957. Coastal Artillery personnel. A photograph of *MUL 15* appears in the 1963-64 to 1966-67 editions. *MUL 20* is projected.

MUL 11 (1946)

Displacement, tons	200 standard
Dimensions, feet	98.8 × 23.7 × 11
Guns	2—20 mm
Main engines	2 diesels; speed = 10 knots

MUL 10 (1939)

Displacement, tons	166 standard
Dimensions, feet	90 × 18.3 × 7.5
Guns	4 MG
Main engines	Deisel; speed = 9.5 knots



MUL 12 1967, Royal Swedish Navy, Official

MINESWEEPER

1 "Bredskar" Class

ULVÖN 58

Displacement, tons	450 standard; 530 full load
Dimensions, feet	180 pp; 187 oa × 25 × 8
Guns	1—4.1 in; 1—40 mm AA; 1 MG
Main engines	De Laval geared turbines; 3 200 shp = 17 knots
Boilers	2 Vanson
Oil fuel, tons	70
Complement	37

Built at Oskarhamns Varv. Launched on 29 Apr 1941. Completed in 1941. Fitted for minelaying. The after deckhouse was removed in 1962.

PHOTOGRAPHS. A photograph of *Bremön* appears in the 1957-58 to 1962-63 editions, and of *Ramskär* in the 1963-64 to 1966-67 editions.

DISPOSALS

Of the "Bredskar" class, *Ven* was scrapped in 1960, *Grönsjär* was officially removed from the effective list on 1 Apr 1963, and *Halmön Koster*, *Sandön* and *Vingo* were officially discarded on 1 Jan 1964, and *Bredskar*, *Bremön*, *Kullen*, *Arskär* and *Ramskär* are being taken out of service by the end of 1967.

Of the "Arholma" class, *Arholma* was scrapped in 1959 and *Landsort* was officially discarded on 1 Jan 1964.

Of the four old minesweepers of the "Jägaren" class, *Snapphanen* was transferred to the new Guatemalan Navy in 1959, and *Jägaren*, *Kaparen* and *Vaktaren* were scrapped in 1958.



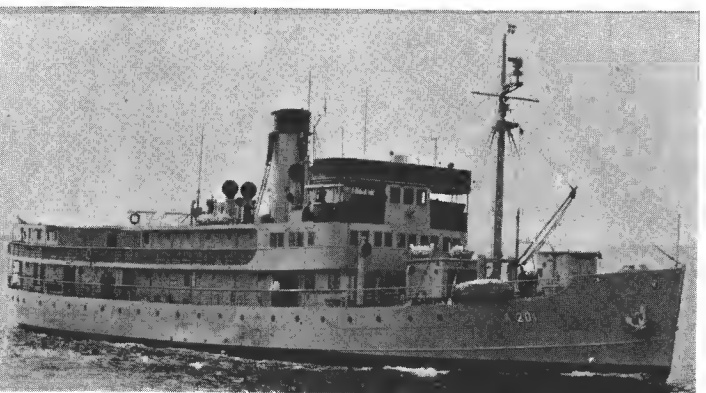
ULVÖN 1967, Royal Swedish Navy, Official

STAFF SHIP (*Srabsfartyg*)

MARIEHOLM

Displacement, tons	1 445 standard
Dimensions, feet	210 × 32.5 × 14
Aircraft	1 helicopter
Guns	2 MG
Main engines	Steam reciprocating; speed = 12 knots

Former passenger ship. Completed in 1934. Converted during the Second World War to serve as a Base Communication Centre for the Commander-in-Chief of the Active Fleet. Recently used as a Staff Ship for the Commander-in-Chief in winter time, flying his flag. The ship had her mainmast removed and a helicopter platform installed aft in 1959 for employment as flagship of the Active Fleet (the "Coast Fleet"). The 40 mm 8ofors on the forecstle has been landed for the time being.



MARIEHOLM 1967, Royal Swedish Navy, Official.

TRAINING SHIPS (*Skonerter*)

FALKEN (12 June 1947)

GLADAN (14 Nov 1946)

Displacement, tons	220 standard
Dimensions, feet	93 wl; 129.5 oa × 23.5 × 13.5
Main engines	Auxiliary diesel; 50 bhp

Sail training ships. Schooners. Launch dates above. Sail area 5 511 square feet.

DISPOSALS

Of the two coast artillery patrol vessels of the "Granat" class, converted Norwegian trawlers, *Granat* was discarded in 1964, and *Harpun* was scrapped in 1966. The coast artillery patrol vessels *Krut* and *Kanan*, converted Norwegian trawlers, were sold out of the service in 1959.

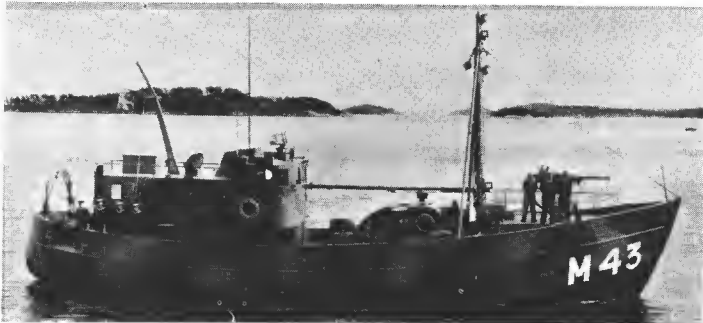
INSHORE MINESWEEPERS

9 "Orust" Class

BLACKAN M 44	GILLÖGA M 47	RÖDLÖGA M 48
DÄMMAN M 45	HISINGEN M 43	SVARTLÖGA M 49
GALTEN M 46	ORUST M 41	TJÖRN M 42

Displacement, tons *Orust, Tjörn*: 110 standard; others 140
Dimensions, feet *Orust, Tjörn*: 62.3 × 19.7 × 4.5; others 76.2 × 21 × 4.7
Guns *Orust, Tjörn*: 1—20 mm AA; others 1—40 mm AA
Main engines 2 diesels; 600 bhp = 9 knots

Orust and *Tjörn* were launched in 1948. Of the fishing cutter type. *Blackan, Dämmän, Galten* and *Hisingen* were launched in 1957. Three more authorised in Apr 1962 were built in 1964. A photograph of *Galten* appears in the 1963-64 to 1966-67 editions.



HISINGEN 1967, Royal Swedish Navy, Official

10 Large Motor Launch Type

M 15	M 19	M 21	M 23	M 25
M 16	M 20	M 22	M 24	M 26

Displacement, tons 70 standard
Dimensions, feet 85.3 × 16.5 × 4.5
Guns 1—20 mm
Main engines Diesel; 600 bhp = 13 knots

All launched in 1941. M 17 and M 18 of this type were rerated as tenders and renamed *Lommen* and *Spöven*, respectively, see later page.



M 25 Royal Swedish Navy, Official

SALVAGE VESSEL (*Bärgningsfartyg*)

BELOS
Displacement, tons 950 standard
Dimensions, feet 204 × 27 × 12
Aircraft 1 helicopter
Main engines Diesel; 2 shafts; 1 200 bhp = 13 knots

A new salvage vessel built to succeed and take the name of the old *Be/os*. Launched on 15 Nov 1961. Completed on 29 May 1963. Equipped with a decompression chamber. The old salvage vessel *Be/os* (launched in 1885), then the world's oldest naval vessel in service (she helped to raise the 334-year old warship *Vasa* in 1961) was discarded on 1 Aug 1963.



BELOS 1967, Royal Swedish Navy, Official

PATROL BOATS (*Vedettbåtar*)

V 57
Displacement, tons 115 standard
Dimensions, feet 98 pp; 105 oa × 17.3 × 7.5
Guns 2—20 mm AA
Main engines Diesel; 500 bhp = 13.5 knots
Complement 12

Built at Stockholm. Launched in 1953. Fitted for minelaying. In Coast Artillery.

DISPOSALS
V 51, V 52, V 53, V 54, V 55 and V 56, 125 tons coal burning triple expansion steam engined type manned by Coast Artillery, were officially discarded in 1967.



V 57 1962, A. Kull

61	62	63	64	65	66	67	68	69	70
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Displacement, tons 30 standard
Dimensions, feet 69 × 15 × 4
Guns 1—20 mm
Main engines Diesel; speed = 19 knots

Guard boats of the coast artillery (*Bevakningsbåt*) launched in 1960-61.



62 1967, Royal Swedish Navy, Official

SVK 1	SVK 2	SVK 3	SVK 4	SVK 5
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Displacement, tons 19
Dimensions, feet 55.8 × 12 × 4
Guns 1—20 mm AA
Speed 11 knots

Patrol launches of the *Sjövärnsskären* type. All launched in 1944. *Sjövärnsskären* = RNVR. *Tumlaren*, a small fishing cutter, also belongs to the SVK.

M 7	M 8
Displacement, tons 50 standard	
Dimensions, feet 78.8 × 16.5 × 4.5	
Guns 1—20 mm	
Main engines Diesel; 400 bhp = 13 knots	

Former inshore minesweepers of the medium motor launch type, taken over as patrol boats.

WATER CARRIERS

FRYKEN 263
Displacement, tons 307 standard
Dimensions, feet 105 × 19 × 9
Main engines Speed = 10 knots

A new construction water carrier. Launched in 1959 and completed in 1960.

UNDEN 268
Displacement, tons 500
Dimensions, feet 121.3 × 23.3 × 14
Speed, knots 10

Launched in 1946.

GÄLNAN
Displacement, tons 100
Dimensions, feet 95 × 19 × 9
Main engines Speed = 8 knots

Launched in 1942. Small water tanker for harbour and local services.

SUPPLY SHIP

FREJA 270
Displacement, tons 300 standard; 450 full load
Dimensions, feet 160.8 × 27.5 × 10
Main engines Speed = 11 knots

Built by Kroger, Rendsburg. Launched in 1953. Employed as a provision ship.

SURVEY SHIPS (Sjömåtningsfartyg)

JOHAN MANSSON
Displacement, tons 900
Dimensions, feet 183.7 × 36 × 8.5
Main engines Speed = 15 knots

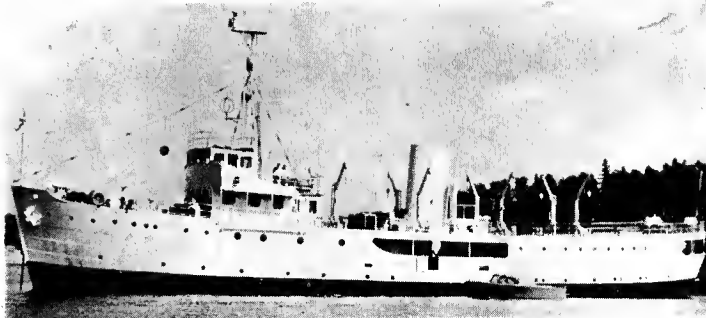
Launched on 14 Jan 1966. A new survey ship is planned in the near future.

RAN
Displacement, tons 285 standard
Dimensions, feet 98.5 × 23 × 8.5

Ran was launched in 1945 and completed and commissioned for service in 1946.

GUSTAV AV KLINT
Displacement, tons 750 standard
Dimensions, feet 170.5 × 28.5 × 15.5
Main engines Diesel; speed = 10 knots

Launched in 1941. Reconstructed in 1963. She formerly displaced 650 tons, length 154 feet. A photograph appears in the 1953-54 to 1963-64 editions.



GUSTAV AV KLINT 1966, Royal Swedish Navy, Official

ANDEN (ex-M 9) **MÄSEN** (ex-M 3) **TÄRNAN** (ex-M 4)
GRISSLAN (ex-M 6) **SVARTAN** (ex-M 5) **VIGGEN** (ex-M 10)
Displacement, tons 50 standard
Dimensions, feet 78.8 × 16.5 × 4.5
Main engines Diesel; 400 bhp = 13 knots

Former inshore minesweepers of the motor launch type, launched in 1940 and subsequently converted into survey craft. M 7 and M 8 were taken over as patrol boats.

JOHAN NORDENANKAR (1924)
Displacement, tons 260 standard
Dimensions, feet 98.5 × 22.3 × 8.2
Main engines Speed = 8 knots

PETTER GEDDA (1924)
Displacement, tons 135 standard
Dimensions, feet 82 × 18 × 7
Main engines Speed = 6 knots

EJDERN (1916)
Displacement, tons 95 standard
Dimensions, feet 78.8 × 15.8 × 17.5
Main engines Speed = 8 knots

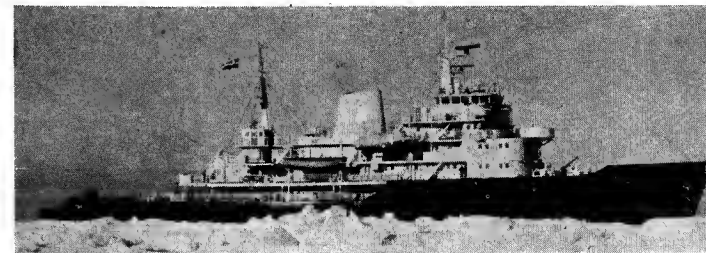
NILS STRÖMCRONA (1894)
Displacement, tons 140 standard
Dimensions, feet 90 × 17 × 8.2
Guns None in peacetime
Main engines Speed = 9 knots

Launch dates above. The older survey ships will eventually be replaced.

ICEBREAKERS (Isbrytarfartyg)

TOR
Displacement, tons 4 980 standard
Dimensions, feet 254.3 pp; 277.2 oa × 69.5 × 20.3
Main engines Wärtsilä-Sulzer diesel-electric; 4 shafts; 2 forward; 2 aft; 12 000 hp = 18 knots

Launched from Wärtsilä's Crichton-Vulcan yard, Turku, on 25 May 1963. Towed to Sandvikens Skeppsdocka, Helsingfors, for completion. Delivered on 31 Jan 1964. Larger but generally similar to *Oden*, and a near-sister to *Tarmo* built for Finland.



TOR 1964, Royal Swedish Navy, Official

Icebreakers—continued

ODEN
Displacement, tons 4 950 standard
Dimensions, feet 256 pp; 273.5 oa × 63.7 × 22.7
Main engines Diesel-electric; 4 shafts; 10 500 bhp = 17 knots
Oil fuel, tons 740
Complement 75

Similar to the Finnish *Voima* and 3 Soviet icebreakers. 4 screws, 2 forward, 2 aft. Built at Sandviken, Helsingfors. Launched on 16 Oct 1956. Completed in 1958.



ODEN Royal Swedish Navy, Official

THULE
Displacement, tons 2 200 standard
Dimensions, feet 187 wl; 204.2 oa × 50 × 19 max
Main engines Diesel-electric; 3 shafts (1 for'd); 4 800 bhp = 16 knots
Complement 43

Launched at the Naval Dockyard, Karlskrona, in 1951. Completed in 1953.



THULE 1966, Royal Swedish Navy, Official

YMER
Displacement, tons 4 330 standard
Dimensions, feet 240 wl; 258 oa × 63.1 × 22.3
Guns 4—3 in AA; 1—40 mm AA; 4—25 mm AA
Main engines 6 Atlas diesel-electric; 9 000 hp = 16 knots
Complement 44

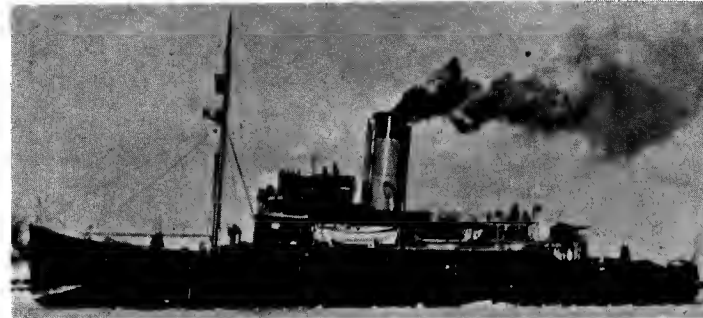
Launched by Kockums MV A/B, Malmö in 1932. First large icebreaker with diesel-electric propulsion. Designed to carry a seaplane for ice spotting and survey.



YMER Royal Swedish Navy, Official

ATLE
Displacement, tons 2 740 standard
Dimensions, feet 194 wl; 207 oa × 55.8 × 22.5
Guns 4—57 mm AA; 4 MG
Main engines 4 000 hp = 15 knots
Complement 44

Launched in 1925. This icebreaker will eventually be replaced by a new icebreaker.



ATLE Official

LANDING CRAFT

BORE	GRIM	HEIMDAL
Displacement, tons	380	
Dimensions, feet	116.5 × 28 × 8.5	
Main engines	Speed = 12 knots	

General utility landing craft of improved design. Launched in 1961 (*Grim*) and 1966.



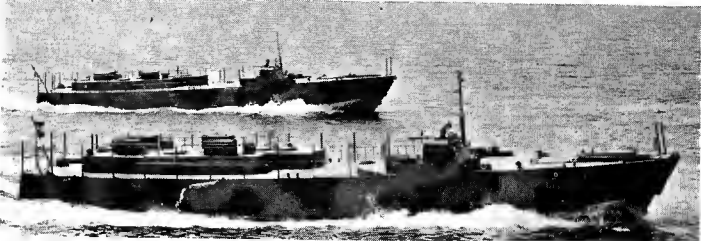
GRIM 1966, Royal Swedish Navy, Official

SKAGUL	SLEIPNER
Displacement, tons	355 standard
Dimensions, feet	118 × 28 × 8.5
Main engines	Speed = 12 knots

Sleipner was launched in 1959 and completed in 1960. *Skagul* was launched and completed in 1960. A photograph of *Skagul* appears in the 1962-63 to 1966-67 editions

Nos. 201-204	205-238	239-241
Displacement, tons	31	
Dimensions, feet	69 × 13.8 × 4.2	
Main engines	Speed = 18 knots	

A series of 41 landing craft rated as Landstigningsfarkoster. Launched in 1957.



200 Series 1967, Royal Swedish Navy, Official

L 51	L 52	L 53	L 54	L 55
Displacement, tons	32 standard (officially revised figure)			
Dimensions, feet	50.8 × 16 × 3.2			
Main engines	Diesel; 140 bhp = 8 knots			

Landing craft of general utility type. Launched in 1948, L 53 and L 54 laid up 1960.

ANE	BALDER	LOKE	RING
Displacement, tons	135 (<i>Loke</i> 145)		
Dimensions, feet	91.9 × 26.2 × 5; (<i>Loke</i> 6)		
Main engines	Speed = 8.5 knots; (<i>Loke</i> 9.2 knots)		

Artillery transport craft for general purpose duties. Launched in 1943-45.

OILERS (*Tankfartyg*)

TANKAREN (ex-Lister) 269	
Displacement, tons	500 standard
Measurement, tons	300 deadweight
Dimensions, feet	118 × 22 × 10
Main engines	Speed = 10 knots

Fleet freighting oil tanker. Launched in 1941.

OLJAREN (ex- <i>Martha</i>) 267	
Displacement, tons	1 100 standard
Cargo capacity	695 tons
Dimensions, feet	179 × 28 × 11
Guns	2—25 mm AA
Main engines	Speed = 9 knots

A photograph of *Oljaren* appears in the 1959-60 to 1965-66 editions.

ELDAREN (ex- <i>Muron</i>) 266	
Displacement, tons	585 standard
Cargo capacity	535 tons
Dimensions, feet	169 × 25·8 × 10
Guns	2—25 mm AA
Main engines	Speed = 9·5 knots

Launched in 1939 (*Oljaren*) and 1938 (*Eldaren*).

TENDERS

PELIKANEN	
Displacement, tons	100 standard
Dimensions, feet	108.2 × 19 × 6
Main engines	Speed = 15 knots

Torpedo recovery and rocket trials vessel. Launched in 1964.

ACHILLES 276	AJAX 277
Displacement, tons	450
Dimensions, feet	108.2 × 28.9 × 12

Achilles was launched in 1962 and *Ajax* in 1963. Both are icebreaking tugs.

HERMES 318	
Displacement, tons	185
Dimensions, feet	75.5 × 22.3 × 13
Main engines	Speed = 11.5 knots

Launched in 1957.

HÄGERN (ex- <i>Torpedbärgaren</i>) 274	
Displacement, tons	50 standard
Dimensions, feet	92 × 16.5 × 6

Hägern was launched in 1951.

LOMMEN (ex- <i>M</i> 17)	SPOVEN (ex- <i>M</i> 18)
Displacement, tons	70 standard
Dimensions, feet	85.3 × 16.5 × 4.5
Main engines	Diesel; 600 bhp = 13 knots

Former inshore minesweepers of the large motor launch type. Both launched in 1941.

SYRIA

MINESWEEPERS

2 Ex-U.S.S.R. "T 43" Type

HITTINE	YARMOUK
Displacement, tons	500 standard; 600 full load
Dimensions, feet	200 × 27.2 × 9
Guns	4—37 mm AA; 8—13 mm AA
Main engines	Diesel motors; 2 shafts; speed = 18 knots

Reported in 1962 to have transferred from the Soviet Navy to the Syrian Navy.

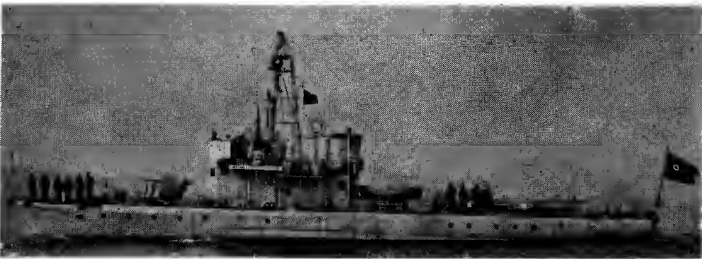
PATROL VESSELS

3 Ex-French "Ch" Type

Name	Builders	Laid down	Launched	Completed
AKABA BEN NASEH	A. C. de France	1938	Jan 1940	Apr 1940
AL HARISSI	A.C. Seine Maut	1938	1939	1940
TAREK BEN SAID	A.C. Seine Maut	1938	1939	1940

Displacement, tons	107 standard; 131 full load
Dimensions, feet	116.5 pp; 121.8 oa × 17.5 × 6.5
Guns	1—3 in; 2—20 mm AA
A/S weapons	Depth charges
Main engines	MAN diesels; 2 shafts; 1 130 bhp = 16 knots
Oil fuel, tons	5
Radius, miles	1 200 at 8 knots; 680 at 13 knots
Complement	28

These former French submarine chasers were transferred in 1962 to form the nucleus of the Syrian Navy. Respectively ex-*Ch* 10, ex-*Ch* 19, and ex-*Ch* 130.



"Ch" Type

M Henri Le Masson

MISSILE PATROL BOATS

10 Ex-U.S.S.R. "Komar" Class

Former Soviet missile patrol boats. See particulars in USSR section.

MOTOR TORPEDO BOATS

15 Ex-U.S.S.R. Type

Displacement, tons	50
Tubes	2—21 in
Main engines	Speed = 40 knots

Five motor torpedo boats were transferred from the USSR at Latakia on 7 Feb 1957, and others subsequently.
NEW CONSTRUCTION. The construction is planned of patrol vessels of 150 tons with a speed of 27 knots; motor torpedo boats; and seaward defence boats of 60 tons with a speed of 23 knots.
ACQUISITION PROGRAMME. One destroyer, two small submarines of the "M" type and six motor torpedo boats were expected from the USSR. Several small craft were received from France.

TAIWAN CHINA

Administration
Commander-in-Chief Chinese Nationalist Navy:
Vice-Admiral Feng Chi-Chung

Fleet Commmander:
Vice-Admiral Li Tan-Chien

Diplomatic Representation
Naval Attaché in Washington:
Rear Admiral Chien Tsou

Ships
Chinese (Taiwan) ship's names are prefaced by "RCN" (Republic of China Navy).

Strength of the Fleet

6 Destroyers	48 Coastal Craft
6 Frigates	6 Transports
11 Escort Transports	5 Oilers
4 Escort Vessels	27 LSTs
5 Fleet Minesweepers	18 LSMs
1 Minelayer	5 LSLs
23 Submarine Chasers	5 LSLs
1 Gunboat	30 LSUs
9 Coastal Minesweepers	8 Support Ships

Personnel
1967: Naval 35,000 officers and ratings:
Marine, 27,000 officers and men

The Navy underwent training with the United States Military Assistance Advisory Group on Taiwan.
United States Marine Corps advisers trained Chinese Nationalist marines in amphibious operations.

Acquisition Programme
1 Destroyer, US "Fletcher" Class
2 Fast Transports, US APD (ex-DEs)

Mercantile Marine
Lloyd's Register of Shipping:
166 vessels of 770,028 tons gross

SUBMARINES

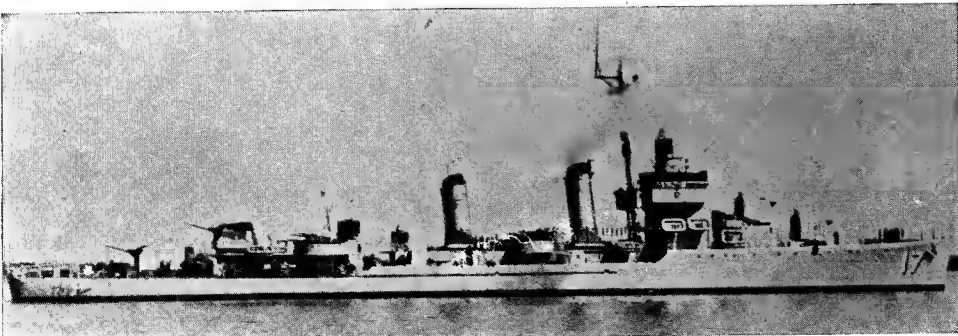
Early in 1960 Nationalist China asked the United States to equip the Nationalists with submarines, and on 14 Mar 1960, Nationalist China confirmed reports that it will receive submarines from the US Navy under the Mutual Defense Assistance Program. In June 1963 the Commander-in-chief, Chinese Nationalist Navy, predicted that his forces will acquire missile-firing submarines, but by Aug 1967 no submarines of any kind were in the Taiwan Navy.

DESTROYERS

Name	No.	Builders	Laid down	Launched	Completed
HSUEN YANG (ex-USS Rodman, DD 456, ex-DMS 21)	16	Federal SB & DD Co	2 Dec 1940	26 Sep 1941	27 Jan 1942
NAN YANG (ex-USS Plunkett, DD 431)	17	Federal SB & DD Co	1 Mar 1939	9 Mar 1940	16 July 1940

2 Ex-U.S. "Gleaves" Class

Displacement, tons 1 630 (Nan Yang 1 700) standard ; 2 575 full load
Length, feet (metres) 341 (104.0) wl; 348.3 (106.2) oa
Beam, feet (metres) 36 (11.0)
Draught, feet (metres) 18 (5.5)
Guns, surface 3-5 in (127 mm) 38 cal ; Nan Yang 4-5 in, 38 cal
Guns, AA 4-40 mm; 4-20 mm
Torpedo tubes 5-21 in (533 mm) in Nan Yang
Boilers 4 Babcock & Wilcox
Main engines GE geared turbines
50 000 shp; 2 shafts
Speed, knots 34
Radius, miles 5 000 at 15 knots
Oil fuel (tons) 600
Complement 250



NAN YANG 1962, courtesy Mr W. H. Davis

Transferred on loan from the US Navy, Rodman on 28 July 1955 and Plunkett on 16 Feb 1959.

FUTURE TRANSFER. Destroyer Kimberley, DD 521, to be transferred in 1967, see particulars under "Fletcher" class in USA section.

PHOTOGRAPHS. An official photograph of the destroyer Hsuen Yang, former US destroyer minesweeper, afterwards reclassified as a destroyer, a port quarter oblique view, appears in the 1956-57 to 1961-62 editions, showing a different scheme of main armament with a modified layout.

Name	No.	Builders	Laid down	Launched	Completed
HAN YANG (ex-USS Hilary P. Jones, DD 427)	15	Philadelphia Navy Yard	16 Nov 1938	14 Dec 1939	7 Sep 1940
LO YANG (ex-USS Benson, DD 421)	14	Bethlehem (Quincy)	16 May 1938	15 Nov 1939	25 July 1940

2 Ex-U.S. "Mayo" Class

Displacement, tons 1 620 standard; 2 450 full load.
Length, feet (metres) 340 (103.6) wl; 348.2 (106.2) oa
Beam, feet (metres) 35.3 (10.8)
Draught, feet (metres) 18 (5.5)
Guns, surface 4-5 in (127 mm) 38 cal.
Guns, AA 4-40 mm; 6-20 mm
A/S DC mortar; DC throwers
Boilers 4 high pressure
Main engines 2 sets GE geared turbines
50 000 shp; 2 shafts
Speed, knots 34
Radius, miles 5 000 at 15 knots
Oil fuel (tons) 600
Complement 250



HAN YANG Added 1957, Official

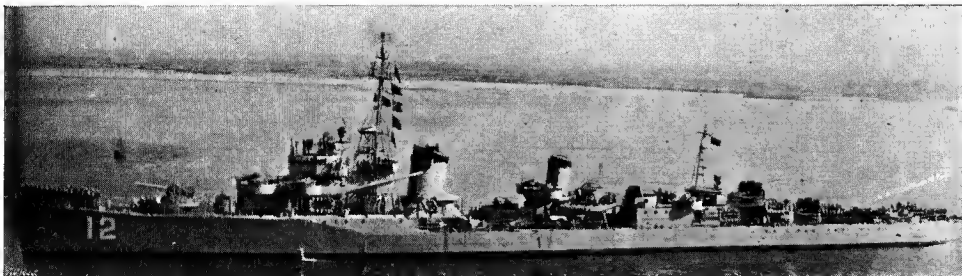
Presented by USA. Transferred to China (Taiwan) at Charleston, South Carolina, on 26 Feb 1954.

PHOTOGRAPHS. A photograph of Lo Yang appears in the 1954-55 to 1957-58 editions.

1 Ex-Japanese "Kagero" Type

Displacement, tons 2 050 standard; 2 490 full load
Length, feet (metres) 388 (118.3) oa
Beam, feet (metres) 35.5 (10.8)
Draught, feet (metres) 12.3 (3.8)
Guns, dual purpose 3-5 in (127 mm) 38 cal. in open mounts in "A", "X" and "Y" positions.
2-3 in (76 mm) in open mounts, one on deck in "P" position, one in deckhouse in "O" position.
Guns, AA 10-40 mm distributed fore and aft
A/S DC racks
Boilers 3 Kampon
Main engines 2 geared turbines
52 000 shp; 2 shafts
Speed, knots 27 (see General Notes)
Radius, miles 5 000 at 18 knots
Complement 290

Name	No.	Builders	Launched	Completed
TAN YANG (ex-Yukikaze)	12	Sasebo, Japan	1939	1940



TA YANG 1962, Official

The largest combatant unit in the Taiwan Navy. Underwent extensive overhaul in 1951-52. On trials in Feb 1953, 27.5 knots was reached, and 26 knots maintained for 1 hour. Rearmed with US guns in 1959.

FRIGATES

4 Ex-U.S. "Bostwick" Type

Displacement, tons	1 240 standard; 1 900 full load
Length, feet (metres)	306 (92.3) oa
Beam, feet (metres)	36.8 (11.2)
Draught, feet (metres)	12 (3.7)
Guns, dual purpose	4—3 in (76 mm) 50 cal.
Guns, AA	3 or 4—40 mm; 9 or 10—20 mm
A/S	8 DCT
Torpedo tubes	3—21 in (533 mm) in triple mounting
Main engines	Diesel-electric
	6 000 bhp; 2 shafts
Speed, knots	19
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	220

Former United States destroyer escorts. Transferred on 31 Dec 1948. Two underwent overhaul in Japanese yards, late in 1952.

FUTURE TRANSFER. The President of the United States signed a bill authorising the loan of a destroyer escort (and a destroyer, see previous page) to Nationalist China (officially announced on 4 May 1966.) The ship, laid up in the "mothball" fleet, will be brought forward from reserve and refitted and modernised before transfer to Taiwan China.

Name	No.	Launched	Completed
TAI CHAO (ex-USS Carter, DE 112)	26	29 Feb 1944	2 May 1944
TAI HO (ex-USS Thomas, DE 102)	23	31 July 1943	21 Nov 1943
TAI HU (ex-USS Breeman, DE 104)	25	31 July 1943	12 Dec 1943
TAI TSANG (ex-Bostwick, DE 103)	24	30 Aug 1943	21 Dec 1943



TAI HO Type Added 1964, Official

1 Ex-U.S. "Evarts" Type

Displacement, tons	1 150 standard; 1 430 full load
Length, feet (metres)	283.5 (86.4) wl; 289.5 (88.2) oa
Beam, feet (metres)	35 (10.7)
Draught, feet (metres)	10.7 (3.3)
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	4—40 mm; 11—20 mm
A/S	9 DCT
Main engines	Diesel-electric
	6 000 bhp; 2 shafts
Speed, knots	19
Radius, miles	5 500 at 14 knots
Complement	120

Former United States destroyer escort. Presented to China in 1946. Sister ship *Tai Ping* (ex-USS *Decker*, DE 47), was torpedoed and sunk by Chinese Republican motor torpedo boats off Tachen islands on 14 Nov 1954.

The following frigates were scrapped in 1964:—*Hsin Yang* (ex-*Hatsume*), ex-Japanese "Hagi" Type, modified "Matsu" class (sister ships *Hon Yang*, *Hua Yang* and *Hui Yang* were already hulked or discarded as beyond economical repair); *Yung Ching* (ex-*Salshu*), ex-Japanese Minelayer Type, formerly rated as a light minelayer and latterly as a destroyer escort. The following frigates were discarded in 1963:—*Cheng An* (ex-*Hsueh Feng*, ex-*Wei Tai*, ex-*Yashiro*), ex-Japanese "Mikura" Type; *Lin An* (ex-*Tsushima*), ex-Japanese "Etorofu" type; *Chen An* (ex-Japanese No.

Name	No.	Builders	Launched	Completed
TAI KANG (ex-US Wyffels, DE 6)	21	Boston Navy Yard	1943	21 Apr 1943



TAI KANG Official

40) and *Tai An* (ex-Japanese No. 104), former Japanese turbine "Kaiboken" Type (sister ships *Tai Nan* and *Tung An* were already discarded); *Chao An* (ex-Japanese No. 107) and *Jui An* (ex-*Ying Kan*, ex-Japanese No. 67), former Japanese diesel "Kaiboken" Type (sister ships *Chang An* and *Tsing Pai* were already hulked).

Name	No.	Builders	Laid down	Launched	Completed	Transferred
TE-AN (ex-Hsi Lin, ex-Orangeville, ex-Heddingham Castle)	81 (ex-61)	Henry Robb Ltd, Leith	23 July 1943	26 Jan 1944	10 May 1944	1 June 1951

Ex-Canadian "Castle" Type

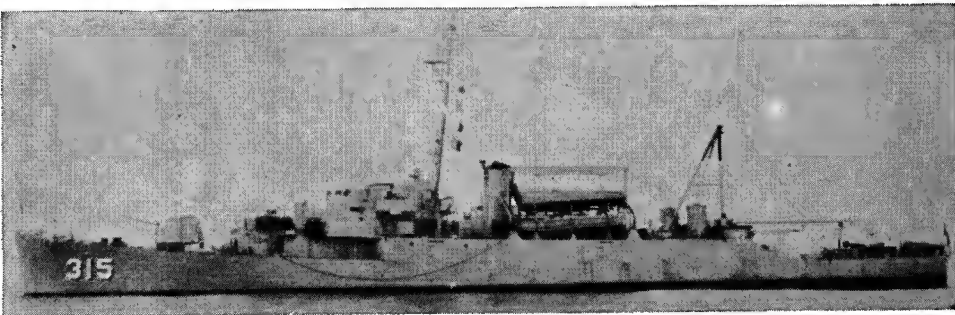
Displacement, tons	1 100 standard; 1 580 full load
Length, feet (metres)	252 (76.8) oa
Beam, feet (metres)	36.7 (11.2)
Draught, feet (metres)	15.8 (4.8)
Guns, dual purpose	1—4.7 in (120 mm); 1—3 in (76 mm)

Guns, AA 4—40 mm; 4—20 mm
Boilers 2 three-drum type
Main engines Triple expansion; 2 800 ihp
Speed, knots 16.5
Radius, miles 9 400 at 10 knots
Oil fuel (tons) 480
Complement 100
subsequently adapted for commercial use. Reconverted from a merchant ship and taken over by Chinese (Taiwan) Navy in June 1951 and rearmed.
DISPOSAL
Sister ship *Kao-An* (ex-*Chin Chin*, ex-*Tillsonburg*, ex-*Pembroke Castle*) was discarded in 1963.
Originally a Canadian "Castle" class corvette, but

FAST TRANSPORTS (Modified Destroyer Escorts)

- Ex-USS **BLESSMAN**, APD 48, ex-DE 69
Ex-USS **BULL**, APD 78, ex-DE 693
Ex-USS **DONALD W. WOLF**, APD 129, ex-DE 713
Ex-USS **GANTNER**, APD 42, ex-DE 60
Ex-USS **GEORGE W. INGRAM**, APD 43, ex-DE 62
Ex-USS **KINZER**, APD 91, ex-DE 232
Ex-USS **KLINE**, APD 120, ex-DE 687
Ex-USS **RAYMOND W. HERNDON**, APD 121, ex-DE 688
Ex-USS **REGISTER**, APD 92, ex-DE 233
Ex-USS **TRUXTON**, APD 78, ex-DE 282
TIEN SHAN (ex-Kleinsmith, APD 134, ex-DE 718)

Displacement, tons	1 400 standard; 2 130 full load
Length, feet (metres)	300 (91.4) wl; 306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draught, feet (metres)	12.7 (3.9)
Guns, dual purpose	1—5 in (127 mm) 38 cal.
Guns, AA	6—40 mm
Boilers	2 Express
Main engines	GE geared turbines, electric drive
	12 000 shp; 2 shafts
Speed, knots	23
Radius, miles	5 500 at 15 knots
Oil fuel (tons)	350
Complement	204 + 162 troops



TIEN SHAN 1962, Official

Former destroyer escorts converted by the USA and officially rated as High Speed Transports. Can carry four LCPV (Landing Craft Vehicle Personnel). *Kleinsmith* was transferred from the United States Navy to Nationalist China at Tsoyin, Taiwan, on 16 May 1960. Her new name *Tien Shan* means Heavenly Mountain. Pennant No. 315. *Gantner* and *Walter B. Cobb* were transferred to Taiwan on 15 Mar 1966 at San Francisco, California, but *Walter B. Cobb* was lost at sea while under tow to Taiwan, and was replaced by *Bull*. Four more, *Donald W. Wolf*, *Kinzer*, *Kline* and *Truxton*, were transferred in 1966, *Raymond W. Herndon* and *Register* in Sep 1966, and *Blessman* and *George W. Ingram* in July 1967.

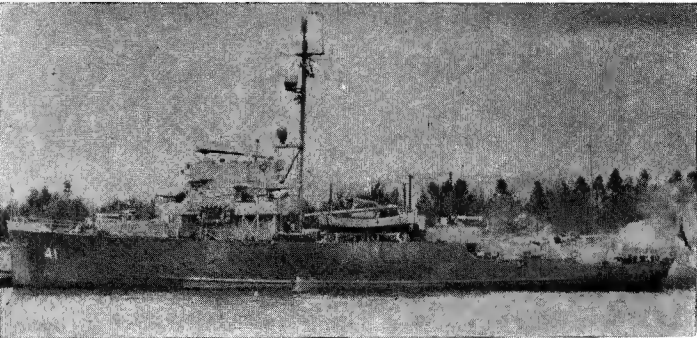
ESCORT PATROL VESSELS

2 Ex-U.S. PCE Type

WEI YUAN (ex-Yung Hsiang, ex-PCE 869, 6 Feb 1943) 42
YUNG TAI (ex-USS PCE 867, 3 Dec 1942) 62 (ex-41)

Displacement, tons 640 standard; 903 full load
Dimensions, feet 180 wl; 184.5 oa x 33 x 9.5 max
Guns 2-3 in dp; 3-40 mm AA; 6-20 mm AA
Main engines Diesel; 2 shafts; 1 800 bhp = 17 knots
Complement 110

Launch dates above. Built by Albina Engine and Machinery Works, Portland, Ore. One 3 inch, 50 cal gun was added in 1955. Rated as gunboats. These may be replaced by *I Men* (PCE 63) and *Chin Lan* (PCE 64). *Yung Tai* was damaged in action on 14 Nov 1965.



YUNG TAI 1963, Official

2 Ex-U.S. MSF Type

CHU YUNG (ex-USS Waxwing, MSF 389) PCE 67
WU SHENG (ex-USS Redstart, MSF 378) PCE 66

Displacement, tons 890 standard; 1 250 full load
Dimensions, feet 215 wl; 221.2 oa x 32.5 x 10.8 max
Guns 2-3 in, 50 cal (single); 4-40 mm AA (2 twin); 4-20 mm AA (2 twin)
A/S weapons 1 ASW projector, 1 triple ASW torpedo tube mounting, 2 DC projectors; 2 DCT
Main engines 2 shafts; 3 530 bhp = 18 knots
Complement 95

Former US Fleet Minesweepers of the "Auk" Class. Steel hulled. Built by American SB Co, Cleveland, Ohio (*Waxwing*) and Savannah Mach & Foundry Co (*Redstart*) Launched and completed in 1964-65. Minesweeping gear removed so that the ships can be employed as Escort Patrol Vessels. *Redstart* and *Waxwing* were transferred on 22 July 1965 and 18 Nov 1965, respectively, at Seattle, Washington. *Chein Men* (ex-USS Toucan, MSF 387) PCE 45, transferred from the US Navy to the Taiwan Navy on 22 Dec 1964, was sunk by Communist Chinese warships south of Quemoy on 6 Aug 1965.

FLEET MINESWEEPERS

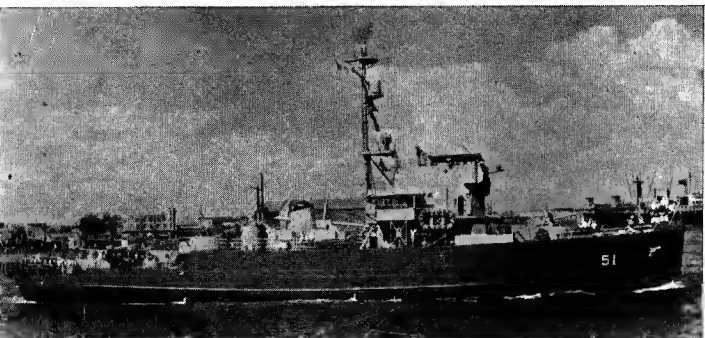
6 Ex-U.S. MSF (ex-AM) Type

47 YUNG CHIA (ex-USS *Implicit*, AM 246, 6 Sep 1943)
48 YUNG HSIU (ex-USS *Pinnacle*, AM 274, 11 Sep 1943)
43 YUNG SHENG (ex-USS *Lance*, AM 257, 10 Apr 1943)
49 YUNG SHOU (ex-USS *Pivot*, AM 276, 11 Nov 1943)
44 YUNG SHUN (ex-USS *Logic*, AM 258, 10 Apr 1943) } 5 rated as Minesweepers

50 YUNG FENG (ex-USS *Prime*, AM 279, 22 Jan 1944) (Minelayer)

Dipslacement, tons 650 standard; 945 full load
Dimensions, feet 180 wl; 184.5 oa x 33 x 9.8 max
Guns 1-3 in dp; 3-40 mm AA; 6-20 mm AA
Main engines Diesel; 2 shafts; 1 710 bhp = 14.8 knots
Complement 104

All MSF (ex-AM) type fleet minesweepers acquired from the US Navy. Launch dates above. *Yung Feng* is fitted for minelaying with tracks on her stern and is rated as a coastal minelayer. *Yung Hsing* served as a maritime customs vessel. *Yung Ting* was converted to a survey ship, see later page. Sister ships *Yung Chun* No. 52 (ex-USS *Gavia*, AM 363), *Yung Ho*, No. 53 (ex-USS *Delegate*, AM 217) and *Yung Kang*, No. 54 (ex-USS *Elusive*, AM 225), all rated as gunboats, and *Yung Hsing*, No. A 4 (ex-USS *Embattle*, AM 226) in the Coastguard, were scrapped in 1964. *Yung Ning*, No. 46 (ex-USS *Magnet*, AM 260), rated as a minesweeper, was discarded in 1963. *Yung Chang* (ex-USS *Refresh*, AM 287) 51, of this class, rated as a gunboat, was sunk off Southern China on 14 Nov 1965 by a Chinese Communist escort.



YUNG CHANG 1962, Official

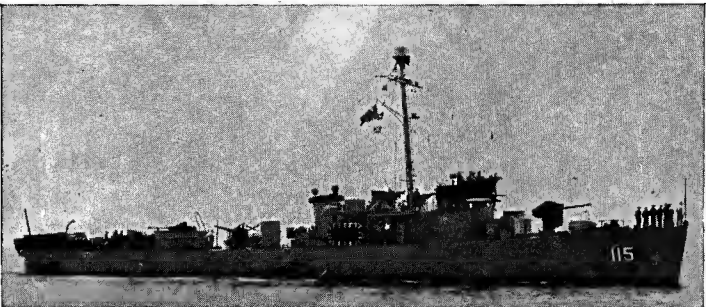
SUBMARINE CHASERS

14 Ex-U.S. PC Type

105 FUKIANG (ex-Hwangpu, ex-US PC 492) 29 Dec 1941
108 HSIANG KIANG (ex-US PC 786) 6 Feb 1943
109 CHIH KIANG (ex-US PC 1078), 8 Aug 1942
111 LI KIANG (ex-US PC 1208), 15 Sep 1943
113 KUNG KIANG (ex-US PC 1233), 11 Jan 1943
114 PO KIANG (ex-US PC 1254), 31 Oct 1942
115 CHUNG KIANG (ex-US PC 1262), 27 Mar 1943
116 CHING KIANG (ex-US PC 1168), 3 July 1943
119 TUNG KIANG (ex-USS *Placerville*, ex-PC 1087)
120 HSI KIANG (ex-USS *Susanville*, ex-PC 1149)
122 PEI KIANG (ex-USS *Hanford*, ex-PC 1142)
123 LIU KIANG (ex-USS *Escondido*, ex-PC 1169)
124 HAN KIANG (ex-USS *Vandalia*, ex-PC 1175)
125 TO KIANG (ex-USS *Milledgeville*, ex-PC 1263)

Displacement, tons 280 standard; 450 full load
Dimensions, feet 173.7 oa x 23 x 10.8 max
Guns 1-3 in, 50 cal; 1-40 mm AA; 5-20 mm AA
Main engines Diesel; 2 880 bhp = 20 knots
Oil fuel, tons 60
Radius, miles 5 000 at 10 knots
Complement 65

Launch dates above. *Hanford*, *Placerville*, *Escondido* and *Vandalia* transferred from the US Navy on 15 July 1957 and *Milledgeville* in July 1959. *Chien Fang* and *Wu Sung* were discarded in 1951-52, and *Chialing* (ex-US PC 1247) in 1964. *Yuan Kiang* was officially deleted from the list in 1966. *Chang Kiang* (ex-US PC 1232) PC 118, was sunk by Communist China warships south of Quemoy on 6 Aug 1965.



CHUNG KIANG United States Navy, Official

9 Ex-U.S. SC Type

SC 502 (ex-*Chu Chien*, ex-SC 708) **SC 503** (ex-103 *Chu Chien*, ex-SC 698)
Ex-SC 518 **Ex-SC 648** **Ex-SC 722** **Ex-SC 735**
Ex-SC 637 **Ex-SC 703** **Ex-SC 723**

Displacement, tons 95 standard; 148 full load
Dimensions, feet 107.5 wl; 110.9 oa x 17 x 6.5
Guns 1-40 mm AA
Main engines Diesel; 2 shafts; 800 bhp = 15.5 knots
Complement 28

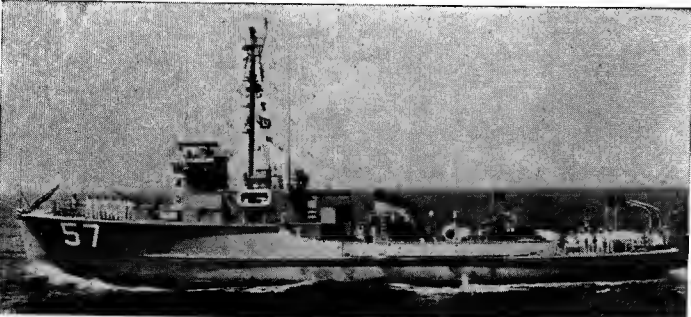
COASTAL MINESWEEPERS

7 Ex-U.S. MSC Type

YUNG AN, MSC 56 (ex-USS MSC 140)
YUNG CHI, MSC 160 (ex-USS MSC 300)
YUNG CHUAN, MSC 58 (ex-USS MSC 278)
YUNG HSIN, MSC 59 (ex-USS MSC 302)
YUNG LO, MSC 161 (ex-USS MSC 306)
YUNG NIEN, MSC 57 (ex-USS MSC 277)
YUNG PING, MSC 55 (ex-USS MSC 123)

Displacement, tons 335 light; 378 full load
Dimensions, feet 138 pp; 145 oa x 27 x 8.5
Guns 2-20 mm AA
Main engines 2 GM diesels; 2 shafts; 880 bhp = 14 knots
Complement 40 (5 officers, 35 men)

"Bluebird" class non-magnetic and wooden hull construction. Built in USA. MSC 123 and MSC 140 were transferred to Taiwan on 4 June 1955. MSC 227, launched on 30 June 1958, and MSC 278, launched on 1 Aug 1958, both built by the Tacoma Boatbuilding Co, were transferred at Seattle on 10 June and 10 July respectively, in 1959. MSC 302 transferred on 5 Mar 1965, MSC 300 on 15 Apr 1965, MSC 306 on 18 May 1966. MSC 307 is being built for transfer by USA.



YUNG NIEN 1963, Official

541 CHIANG (ex-No. 22) **542 CHIANG YUNG** (ex-No. 19)

Displacement, tons 222 normal
Dimensions, feet 98 x 19.5 x 7.8
Guns 2-40 mm; 2-25 mm; 2 MG
Main engines Diesel; Speed = 9 knots

Former Japanese auxiliary minesweepers. Built in Japan in 1942-43.

GUNBOATS

1 Ex-U.S. PGM Type

117 **CHU KIANG** (ex-USS PGM 31, ex-PC 1567)

Displacement, tons	295 standard; 470 full load
Dimensions, feet	173.7 oa; 170 wl x 23 x 11 max
Guns	1—3 in; 1—40 mm AA; 4—20 mm AA
Main engines	2 GM diesels; 2 800 bhp = 20 knots
Complement	80

Built by Leatham D. Smith SB Co, Sturgeon Bay, Wis. Laid down on 18 July 1944, launched on 23 Sep 1944 and completed on 17 Jan 1945. Transferred from the US Navy in 1954. 103 *Ling Chiang* (ex-*Tung Ting*, ex-USS PGM 13) was torpedoed and sunk by Chinese Republican motor torpedo boats on 10 Jan 1955. 101 *Ying Chiang* (ex-*Pao Ying*, ex-USS PGM 20) was torpedoed by Republican motor torpedo boats on 20 Jan 1955, and was subsequently scrapped as beyond economical repair.

DISPOSALS

Sister ship *Ou Chang*, No. 102 (ex-*Hung Tse*, ex-USS PGM 26), *Chu Chiang*, No. 106 (ex-*Ya Ling*, ex-49, ex-*Hai Hung*, SC 401), ex-Japanese type and the very old gunboat *Chu Kuan*, No. 75, Japanese built, were scrapped in 1964. The old gunboat *Yung Hsiang*, also Japanese built and the old auxiliary minelayer *Chieh 29* (ex-*Kuroshimu*), Japanese built, were previously deleted from the active list.



CHU KIANG 1962, Official

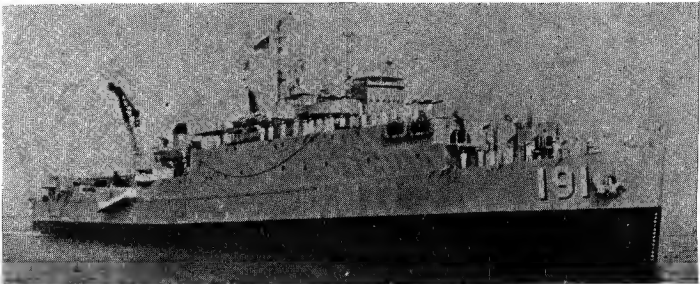
DOCK LANDING SHIP

1 Ex-U.S. "Ashland" Class

TUNG HAI LSD 191 (ex-USS *White Marsh*, LSD 8)

Displacement, tons	4 790 standard; 8 700 full load
Dimensions, feet	454 wl; 457.8 oa x 72 x 18
Guns	12—40 mm AA
Main engines	Skinner Unaflo; 2 shafts; 7 400 ihp = 15.6 knots
Boilers	2, of 2-drum type
Complement	326 (total accommodation)

Built by Moore Dry Dock Co. Launched on 19 July 1943. Designed to serve as parent ship for landing craft and coastal craft. Transferred from the US Navy to the Chinese (Taiwan) Navy on 17 Nov 1960 at Long Beach, California, under the Military Aid Programme.



TUNG HAI 1965, Official

REPAIR SHIPS

335 **SONG-SHAN** (ex-LST 202, ex-USS LST 1030)

Displacement, tons	1 625 light; 4 080 full load
Dimensions, feet	316 wl; 328 oa x 50 x 14
Main engines	Diesel; 2 shafts; 1 700 bhp = 11 knots
Cargo capacity, tons	2 100
Complement	211

Former US tank landing ship converted into a repair ship. Built at Boston Navy Yard. Laid down on 27 May 1944, launched on 25 June 1944 and completed on 19 July 1944.

Ex-**VULCAIN** (ex-USS *Agenor*, ARL 3, ex-LST 490)

Displacement, tons	1 625 light; 4 080 full load
Dimensions, feet	328 oa x 50 x 14.5
Guns	8—40 mm AA; 8—20 mm AA
Main engines	2 diesels; 1 700 bhp = 10.8 knots
Oil fuel, tons	1 060
Radius, miles	6 000 at 9 knots

Former US ocean tank carrier with bow doors. Built by Kaiser Co, Inc, Vancouver, Wash. Laid down on 24 Jan 1943. Launched on 3 Apr 1943. Completed on 20 Aug 1943. Transferred from the US Navy to France in 1951 for service in Indo-China. Returned to the USA by France, and then transferred to (Taiwan) China by the USA on 15 Sep 1957.

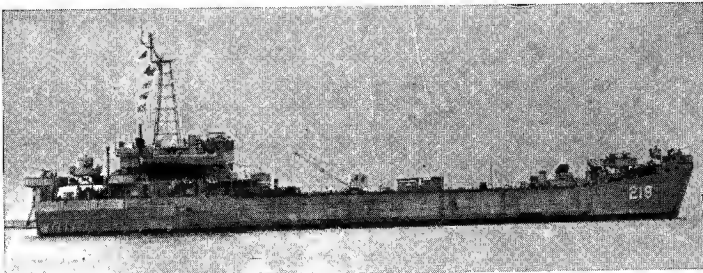
TANK LANDING SHIPS

27 Ex-U.S. LST Type

216 CHUNG KUANG (ex-USS LST 503)	Ex-USS LST 520
226 CHUNG SHIH (ex-USS <i>Sagadahoc County</i> , LST 1910)	Ex-USS LST 535
227 CHUNG MING (ex-USS <i>Sweetwater County</i> , LST 1152)	Ex-USS LST 578
231 CHUNG YEA (ex-USS <i>Sublette County</i> , LST 1144)	
218 CHUNG CHIH (ex-USS <i>Berkeley County</i> , LST 279)	
221 CHUNG CH'UAN (ex- <i>Wan Yiu</i> , ex- <i>Lu Yi</i> , ex-LST 640)	
224 CHUNG CHENG (ex-USS <i>Lafayette County</i> , LST 859)	
206 CHUNG CHI (ex-LST 1017)	205 CHUNG CHIEN (ex-LST 716)
225 CHUNG CHIANG (ex-USS <i>San Bernardino County</i> , LST 1110)	
230 CHUNG BANG	CHUNG MING
223 CHUNG FU (ex-USS <i>Iron County</i> , LST 840)	
201 CHUNG HAI (ex-LST 755)	219 CHUNG HSI
204 CHUNGNG HSI (ex-LST 557)	
208 CHUNG SHUN (ex- <i>Wan Kuo</i> , ex-LST 732)	
209 CHUNG LIEN (ex-LST 1050)	
228 CHUNG SUO (ex-USS <i>Bradley County</i> , LST 400)	
203 CHUNG TING (ex-LST 537)	222 CHUNG SHENG (ex-LST 1033)
229 CHUNG WAN (ex-USS <i>Dukes County</i> , LST 735)	
215 CHUNG YU (ex- <i>Wan Li</i> , ex-LST 330)	210 CHUNG YUNG (ex-LST 574)

Displacement, tons	1 653 standard; 4 080 full load
Dimensions, feet	316 wl; 328 oa x 50 x 14 max
Guns	6—40 mm AA; 12—20 mm AA
Main engines	Diesel; 2 shafts; 1 700 bhp = 11 knots
Complement	419

LST 218, 400 and 735 transferred to Nationalist China at San Diego, in July 1955 and 1960 (*Dukes County*), LST 216 at San Diego 29 April 1955, LST 226 and LST 227 at Seattle on 21 Oct 1958, LST 520, 535 and 578 in Sep 1958, LST 213, 224 and 225 in 1958, LST 231 at Charleston, SC, on 21 Sep 1961. Ex-US LST 732 and ex-US LST 1152 are on loan to US with Chinese crews. An LST was torpedoed and sunk by Chinese Republican torpedo boats off Quemoy on 25 Aug 1958. LST 208 *Chung Shun* (ex-LST 993) is believed to have been lost, since a newly acquired LST has been numbered 208. Five of above (200, 202, 308, 313, 315) were acquired from the merchant service in 1955. LST 313 *Chung Kung* (ex-*Chung*, ex-LST 945) was scrapped in 1956, LST 207 *Chung Cheng* in 1958.



CHUNG SHIH 1962, Official

1 AGC Type

KAO HSIUNG (AGC 1)

This amphibious force flagship reported acquired, and named as above in 1964.

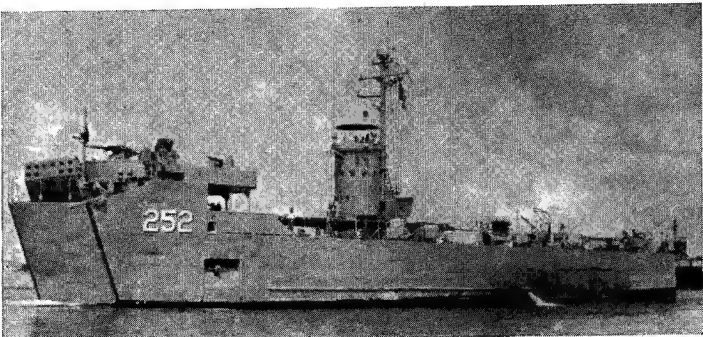
MEDIUM LANDING SHIPS

18 Ex-U.S. LSM Type

241 MEI CHIN (ex-LSM 155)	251 MEI CHEN (ex-LSM)
245 MEI HENG (ex-LSM 456)	252 MEI KUN (ex-LSM)
248 MEI HO (ex-LSM 13)	253 MEI PING (ex-USS LSM)
244 MEI PENG (ex-LSM 431)	254 MEI WEN (ex-LSM 472)
246 MEI HUNG (ex-LSM 442)	255 MEI HAN (ex-LSM 474)
247 MEI SUNG (ex-LSM 457)	256 MEI LO (ex-USS LSM 362)
243 MEI I (ex-LSM 285)	Ex-LSM 422
249 MEI CHIEN (ex-LSM)	Ex-LSM 471
250 MEI HWA (ex-LSM)	Ex-LSM 478

Displacement, tons	743 standard; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa x 34.5 x 7.3
Guns	2—40 mm AA; 4—20 mm AA
Main engines	Diesel; 2 shafts; 2 800 bhp = 12 knots
Complement	59 (<i>Mei Lo</i> 6 officers and 46 men)

Mei Lo 242 (ex-LSM 157) was destroyed by Chinese Communist artillery and beached on Quemoy Island on 8 Sep 1958. *Mei Wen*, 254, and *Mei Han*, 255, were transferred from the United States Navy at Seattle, Wn, on 6 Feb 1959. LSM 242, LSM 471 and LSM 478 were also loaned to Nationalist China by the USA in 1959. *Mei Lo* 256 (ex-LSM 362) was transferred at Bremerton, Wash in May 1962.

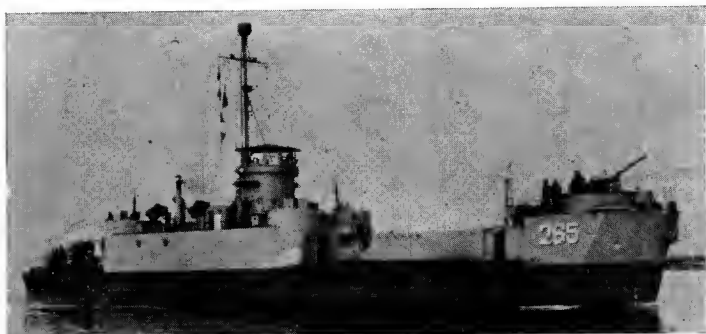


MEI KUN 1962, Official

LANDING CRAFT

5 LSIL Type

264 LIEN CHENG (ex-LCI (M) 630)	261 LIEN CHU (ex-LCI (G) 233)
265 LIEN HUA (ex-LCI (G) 631)	262 LIEN LI (ex-LCI (G) 417)
	263 LIEN SHENG (ex-LCI (G) 418)
Displacement, tons	227 standard; 387 full load
Dimensions, feet	159 x 23.7 x 5.7
Guns	2—20 mm AA
Main engines	Diesel; 2 shafts; 1 320 bhp = 14 knots
Complement	28
Former United States Landing Craft Infantry (Gunboat), and Landing Craft Infantry (Mortar). Armament varies. China (Taiwan) received ex-US LSIL 818, 1017, 1092 from the United States under MDAP (they were formerly on loan to France from the USA for service in Indo-China) to be used only for cannibalization.	



LIEN HUA

1963, Official

3 LSSL Type

271 LIEN CHIH (ex-USS LSSL 56)	272 LIEN JEN (ex-USS LSSL 81)
	273 LIEN YUNG (ex-USS LSSL 95)
Displacement, tons	227 standard; 387 full load
Dimensions, feet	153 wl; 158 oa x 28.7 x 5.7
Guns	6—40 mm AA (twin); 10 rocket launchers
Main engines	GM diesels; 2 shafts; 1,320 bhp = 14.4 knots
Complement	78

Ex-US LSSL's formerly LCS(L) 3, Landing Craft Support (Large) transferred at Yokosuka, Japan, on 19 Feb 1954. Taiwan received ex-US LSSL 2 and 28 from USA under MDAP (they were formerly on loan to France from USA for service in Indo-China) to be used for cannibalization.

30 LCU (ex-LCT) Type

405 HO CHANG (ex-LCT 512)	407 HO CHIH (ex-LCT)
406 HO CHEN (ex-LCT 1145)	401 HO CHUN (ex-LCT 892)
403 HO CHENG (ex-LCT 1143)	404 HO CHUNG (ex-LCT 849)
	402 HO CH'UNG (ex-LCT 1213)
Displacement, tons	143 standard; 285 full load
Dimensions, feet	114.2 x 32.7 x 3.5
Guns	2—20 mm AA
Main engines	Diesel; 3 shafts; 675 bhp = 10 knots
Complement	11

Additional craft were transferred, including 5 LCU (craft formerly on loan to France from the USA for use in Indo-China). Those listed were ex-LCU 290, 292, 638, 700, 1225, 1271, 1596, 1597, 1598, 1600 and 1601. In 1964 ex-LCU 1212, 1218, 1224, 1367, 1397, 1429 and 1452 transferred from USA under MAP.

SURVEY SHIPS

362 YANG MING (ex-45 <i>Yung Ting</i> , ex-USS <i>Lucid</i> , AM 259)	
Displacement, tons	650 standard; 945 full load
Dimensions, feet	180 wl; 184.5 oa x 33 x 9.8 max
Main engines	Diesels; 2 shafts; 1 710 bhp = 14.8 knots

Former US fleet minesweeper converted into a survey ship. Launched 5 June 1943.

266 LIEN CHING

Former US LSIL type converted into a survey ship. See particulars above.

PATROL CRAFT

521 HAI LI	546 CHIANG LIEN	591 P'AO 111	635 P'AO 5
522 HAI NING	547 CHIANG P'ING	592 P'AO 112	636 P'AO 6
523 HAI YAO	548 CHIANG FENG	593 P'AO 113	637 P'AO 7
524 HAI WEI	549 CHIANG KUNG	594 P'AO 114	638 P'AO 8
525 HAI AN	550 CHIANG LUN	595 P'AO 115	639 P'AO 9
526 HAI CHING	551 CHIANG CH'ENG	596 P'AO 116	640 P'AO 10
542 CHIANG YUNG	581 P'AO 101	631 P'AO 1	641 P'AO 11
543 CHIANG HSIU	584 P'AO 104	632 P'AO 2	642 P'AO 12
544 CHIANG TING	587 P'AO 107	633 P'AO 3	643 P'AO 13
545 CHIANG MING	588 P'AO 408	634 P'AO 4	646 P'AO 16

6 Ex-HDML Type

681 FANG I	684 FANG SEU	686 FANG LIU
682 FANG SAN	685 FANG CHI	687 FANG PA
Displacement, tons	46 standard; 54 full load	
Dimensions, feet	72 x 15.9 x 4.8	
Guns	1—40 mm; 1—20 mm; 4 MG	
Main engines	2 Diesels; 320 bhp = 11 knots	

Former harbour defence motor launches. Built in Great Britain in 1942-43.

2 MTB Type

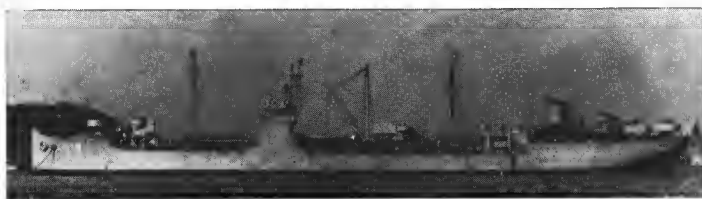
FU CHOU (PT 511)	HSUEH CHIH (PT 512)
Built by Mitsubishi Zosen Co., Japan in 1957. Armed with 18-inch torpedo tubes and 1—20 mm AA gun aft.	

OILERS

309 OMEI (ex-USS *Maumee*)

Displacement, tons	4 990 standard; 14 500 full load
Dimensions, feet	475.7 oa x 56 x 10 mean; (26.2 max)
Guns	5—3 in; 2—40 mm AA; 8—20 mm AA
Main engines	Diesel; 2 shafts; 5 000 bhp = 14 knots
Oil fuel, tons	820

Built at Mare Island Yard, USA. Capacity 7 850 tons. Launched on 17 Apr 1915.



OMEI

1963, Official

307 CHANG PEI (ex-USS *Pecatonica*, AOG 57)

Displacement, tons	1 850 light; 4 335 full load
Measurement, tons	2 575 deadweight
Dimensions, feet	292 wl; 310.8 oa x 48.5 x 15.7 max
Guns	4—3 in dp 50 cal
Main engines	Diesel-electric; 2 shafts; 3 300 bhp = 14 knots
Former US petrol carrier of the "Patapasco" class. Built by Cargill, Inc, Savage, Minn. Laid down on 6 Dec 1944. Launched on 17 Mar 1945. Transferred to Taiwan China under MAP on 24 Apr 1961 at Tsoying, Taiwan. Crew 124.	

306 KUAI CHI (ex-Soviet *Tuapse*)

Petrol Tanker. Captured in 1954. Commissioned in Nationalist Navy in Feb 1956.

304 SZU MING (ex-USS *YO 198*)

Displacement, tons	1 400 full load
Dimensions, feet	174 oa x 32 x 15
Guns	1—25 mm; 2—20 mm; 2 MG
Main engines	Diesel; 560 bhp = 11 knots
Built in USA in 1945 by Manitowoc SB Co, Wis. Capacity 6 570 barrels.	

302 HSIN KAO (ex-Tai *Hwa*, ex-USS *Towaliga*, AOG 42)

Displacement, tons	700 standard; 2 700 full load
Measurement, tons	1 453 deadweight
Dimensions, feet	212.5 wl; 220.5 oa x 37 x 12.8
Guns	1—3 in; 2—40 mm AA; 3—20 mm AA
Main engines	Diesel; 1 shaft; 800 bhp = 10 knots
Ex-US. TI-M-A2 type, "Mettawee" class. Launched by East Coast Shipyards on 29 Oct 1944. Sister ship <i>Yu Chuan</i> , No. 303 (ex- <i>Wautanga</i> , AOG 22, ex- <i>Conrol</i> , ex-USS <i>Sakatonchee</i> , YOG 52) and the oiler <i>Ho Lan</i> , No 305 (ex-Polish oiler <i>Praca</i>) were scrapped in 1964.	

TRANSPORTS

311 WULING (ex-*Shirasaki*)

Displacement, tons	950
Dimensions, feet	203 x 31.2 x 10.2
Guns	1—3 in; 1—40 mm AA; 8—25 mm AA; 4 MG
Main engines	2 diesels; 600 bhp = 15 knots
Former Japanese. Refrigerated cargo ship. Destroyer hull.	

313 TIEN CHU**315 CHIU HUA****HUEI FENG****316 TIEN TAI****317 CHUNG SHAN**

Displacements and other particulars vary in individual ships. *Tien Chu* is ex-Polish cargo ship *Prezedent Gottwald* captured by China while trading with the Communists.

TUGS

TA TUNG (ex-USS *Chickasaw*, ATF 83)

Displacement, tons	1 235 standard; 1 675 full load
Dimensions, feet	195 wl; 205 oa x 38.5 x 15.4 max
Guns	1—3 in
Main engines	GM diesel electric; 1 shaft; 3 000 bhp = 16.5 knots

US fleet ocean tug of the "Apache" class transferred on loan in Jan 1966.

342 TA WU (ex-Wu *Kung*, ex-Pei *Chi* No. 1, ex-LT) **343 TA MING** (ex-LT 300)

Displacement, tons	570 light; 967 full load
Dimensions, feet	149 oa x 33 x 15
Guns	1—40 mm; 2—20 mm
Main engines	Reciprocating. Oil fuel. 1 200 hp = 12 knots

Built in USA in 1943. *Ta Ch'ing* reported decommissioned on 1 June 1951.

345 TA YU (ex-LT 310)**347 TA SHUEH** (ex-USS *Tonkowa*, ATA 176)

Displacement, tons	534 standard; 835 full load
Dimensions, feet	133.7 wl; 143 oa x 33.9 x 13.2
Guns	2—25 mm; 2 MG; (<i>Ta Shueh</i> 1—3 in)
Main engines	Diesel-electric; 1 500 hp = 12.5 knots

Ta Yu is a former US Army tug. *Ta Shueh* is a former US Navy tug of the "Marikopa" class built by Livingstone S8 Co, Orange, Texas, completed on 19 Aug 1944, and transferred on 5 Apr 1962. (There are small harbour tugs YTL 427, YTL 428, YTL 454, YTL 584 and YTL 585 transferred by USA in 1963-64).

TANZANIA

Coastal Patrol Boats

It was officially stated in 1967 that the four kustenuachboote loaned to the Tanzania Government by the Federal Republic of Germany, KW 4, KW 5, KW 9 and KW 10, shipped from West Germany on 8 Dec 1963, and renamed *Rafiki*, *Papa*, *Uhura* and *Salama*, respectively, see full particulars in the 1966-67 edition, have since been handed over to the Southern Engineering Company of Mombasa, Kenya.

There are reported to be four other small patrol boats, two of 50 tons and two of 27 tons.

ROYAL THAI NAVY

Administration

Commander-in-Chief of the Navy:
Admiral Charoon Chalermthirana

Chief of the Naval Staff:
Admiral Thavil Rayananon

Diplomatic Representation

Naval Attaché in London:
Captain Ampon Nabangchang

Naval Attaché in Washington:
Captain Supa Gajasen

Personnel

1967: *Navy*, 15,000 (2,000 officers and 13,000 ratings)
Marine Corps, 6,400 (400 officers and 6,000 men)

Strength of the Fleet

1 Destroyer Escort	2 Patrol Boats
4 Frigates	2 Gunboats
1 Escort Minesweeper	5 CG Vessels
2 Armoured Gunboats	6 Landing Ships
2 Coastal Minelayers	8 Landing Craft
18 Patrol Vessels	1 Survey Ship
4 Coastal Minesweepers	15 Auxiliaries

DESTROYER ESCORT

Name
PIN KLAO (ex-USS *Hemming*, DE 746)

No.
DE 3 (ex-1)

Builders
Western Pipe & Steel Co

Launched
12 Sep 1943

Completed
30 May 1944

1 Ex-U.S. "Bostwick" Class

Displacement, tons	1 240 standard; 1 900 full load
Length, feet (<i>metres</i>)	306 (93.3) oa
Beam, feet (<i>metres</i>)	37 (11.3)
Draught, feet (<i>metres</i>)	14 (4.3)
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	6—40 mm
A/S	8 DCT
Torpedo tubes	6 (2 triple mounts) for A/S torpedoes
Main engines	GM diesels with electric drive 6 000 bhp; 2 shafts
Speed, knots	20
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	220

Transferred from the United States Navy to the Royal Thai Navy at New York Naval Shipyard in July 1959 under the Mutual Defence Assistance Programme and given the new Thai name *Pin Kiao*.

ARMAMENT. The 3—21 in torpedo tubes were removed, and the 4—20 mm AA guns were replaced by 4—40 mm AA. The six ASW torpedo tubes were fitted in 1966.



PIN KLAO

1966, Royal Thai Navy, Official

FRIGATES

Name
PRASAE (ex-USS *Gallup*, PF 47)
TAHCHIN (ex-USS *Glendale*, PF 36)

No.
2
1

Builders
Consolidated Steel Corpn, Los Angeles
Consolidated Steel Corpn, Los Angeles

Laid down
18 Aug 1943
6 Apr 1943

Launched
17 Sep 1943
28 May 1943

Completed
29 Feb 1944
1 Oct 1943

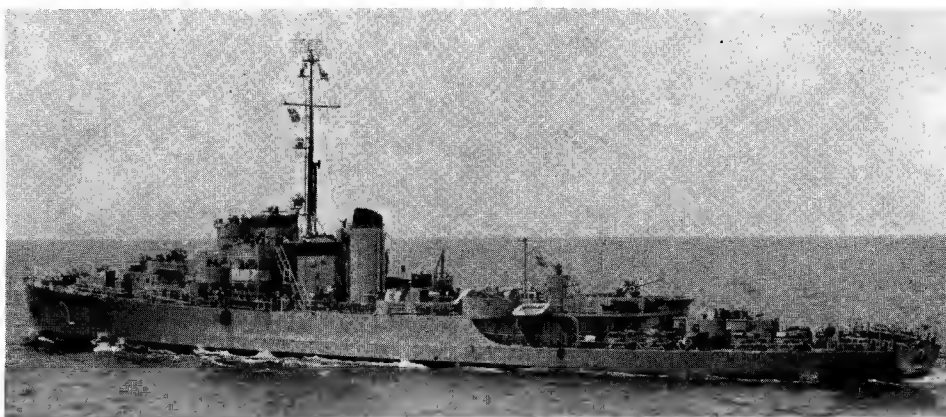
Ex-U.S. PF Type

2 "Prasae" Class

Displacement, tons	1 430 standard; 2 100 full load
Length, feet (<i>metres</i>)	304 (92.7) oa
Beam, feet (<i>metres</i>)	37.5 (11.4)
Draught, feet (<i>metres</i>)	13.7 (4.2)
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	2—40 mm; 9—20 mm
A/S	8 DCT
Boilers	2 small water tube 3-drum type
Main engines	Triple expansion 5 500 ihp; 2 shafts
Speed, knots	19
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	685
Complement	180

Former United States patrol frigates of the "Tacoma" class. Delivered to the Royal Thai Navy on 29 Oct 1951. They were of similar design to the British frigates of the "River" class.

PHOTOGRAPHS. A photograph of *Tahchin* appears in the 1953-54 to 1964-65 editions.



PRASAE

1965, Royal Thai Navy, Official

Name
BANGPAKONG (ex-Gondwana, ex-HMS *Burnet*)

No.
PF 4

Builders
Ferguson Bros Ltd, Port Glasgow

Laid down
2 Nov 1942

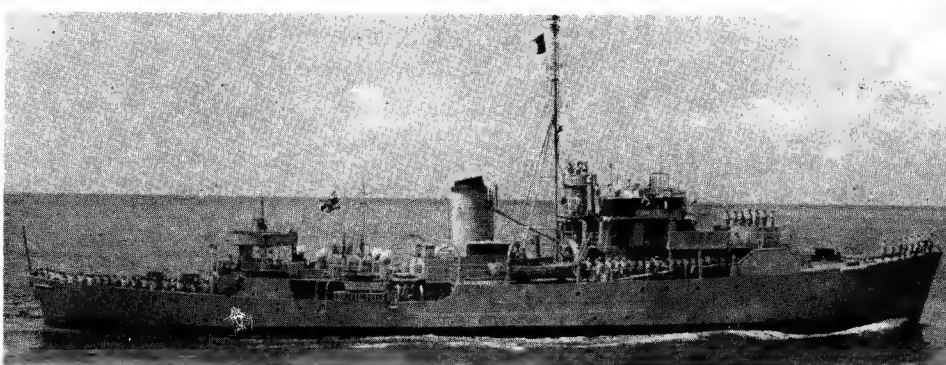
Launched
31 May 1943

Completed
23 Sep 1943

1 Ex-British "Flower" Class

Displacement, tons	1 060 standard; 1 350 full load
Length, feet (<i>metres</i>)	193 (58.8) pp; 203.2 (61.9) oa
Beam, feet (<i>metres</i>)	33 (10.0)
Draught, feet (<i>metres</i>)	14.5 (4.4)
Guns, dual purpose	1—3 in (76 mm) 50 cal.
Guns, AA	1—40 mm; 6—20 mm
A/S	4 DCT
Boilers	2 three-drum type
Main engines	Triple expansion; 2 880 ihp
Speed, knots	16
Radius, miles	4 800 at 12 knots
Oil fuel (tons)	282
Complement	100

Served in the Indian Navy before transfer to the Royal Thai Navy. The 3 inch gun replaced a 4 inch gun, and the 40 mm gun replaced a 20 mm gun in 1966. Sister ship *Prasae* (ex-*Sind*, ex-*Betony*) was lost in the Korean War on 13 Jan 1951.



BANGPAKONG

Royal Thai Navy, Official

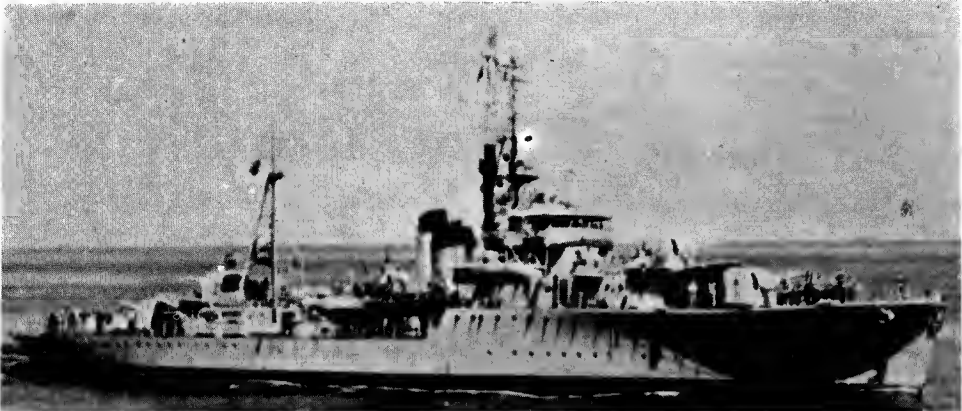
Frigates—continued

Name	No.	Builders	Laid down	Launched	Completed
MAEKLONG	3	Uruga Dock Co, Japan	1936	27 Nov 1936	June 1937

1 Sloop Type

Displacement, tons	1 400 standard; 2 000 full load
Length, feet (metres)	269 (82.0)
Beam, feet (metres)	34 (10.4)
Draught, feet (metres)	10.5 (3.2)
Guns, surface	4—4.7 in (120 mm)
Guns, AA	3—40 mm; 3—20 mm
Boilers	2 water tube
Main engines	Triple expansion
	2 500 ihp; 2 shafts
Speed, knots	14
Radius, miles	8 000 at 12 knots
Oil fuel (tons)	487
Complement	155 as training ship

Ordered in 1934. Designed as a dual-purpose sloop and torpedo boat. Fitted for minesweeping. Employed as a training ship. The 4—18 inch torpedo tubes were removed. The 40 mm and 20 mm AA guns were each increased from two to three in 1966. Sister ship *Tachin* was heavily damaged during the Second World War on 1 June 1945 and eventually scrapped.



MAEKLONG 1967, Royal Thai Navy, Official

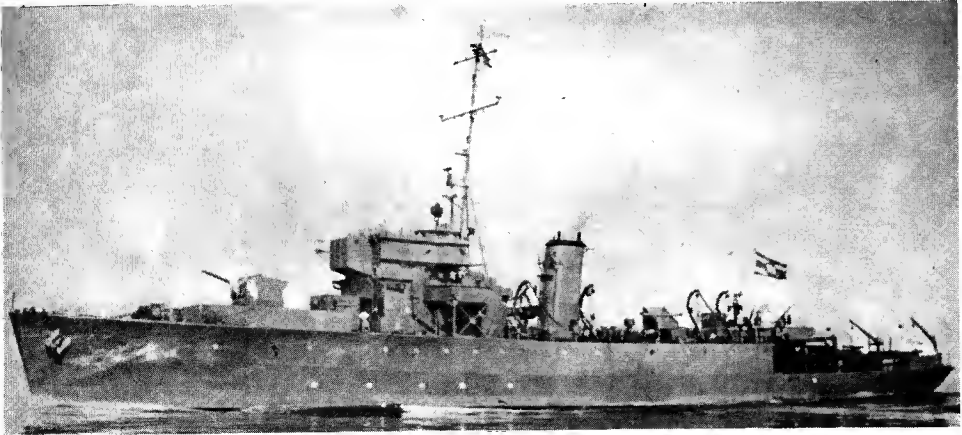
ESCORT MINESWEEPER

Name	No.	Builders	Laid down	Launched	Completed
PHOSAMTON (ex-HMS <i>Minstrel</i>)	MSF 1	Redfern Construction Co	1943	5 Oct 1944	1945

1 Ex-British "Algerine" Class

Displacement, tons	1 040 standard; 1 335 full load
Length, feet (metres)	225 (68.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	10.5 (3.2)
Guns, surface	1—4 in (102 mm)
Guns, AA	6—20 mm
A/S	4 DCT
Boilers	2 three-drum type
Main engines	Triple expansion
	2 000 ihp; 2 shafts
Speed, knots	16
Radius, miles	5 000 at 10 knots
Oil fuel (tons)	270
Complement	103

Former British "Algerine" class minesweeper of ocean-going type capable of fleet sweeping and escort duties. The 20 mm AA guns were increased from 3 to 6, and the DCTs from 2 to 4 in 1966.



PHOSAMTON 1965, Royal Thai Navy, Official

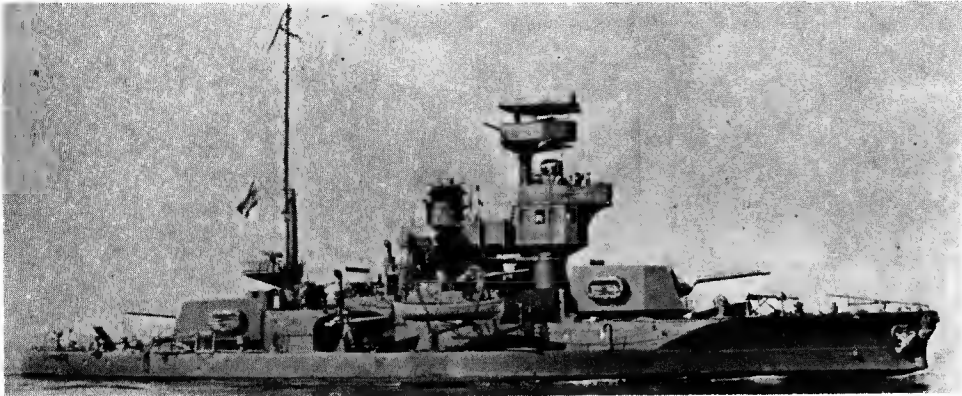
ARMoured GUNBOATS

2 Coast Defence Type

Displacement, tons	886 standard; 1 000 full load
Length, feet (metres)	160 (48.8) pp; 173 (52.7) oa
Beam, feet (metres)	37 (11.3)
Draught, feet (metres)	10.8 (3.3)
Guns, surface	2—6 in (152 mm)
Guns, dual purpose	4—3 in (76 mm)
Guns, AA	2—40 mm; 3—20 mm
Armour	Sides: 2½ in (63 mm) midship, 1½ in (32 mm), ends; Barrette rings 2½ in (63 mm); CT 4½ in (120 mm); Upper deck 1½ in—¾ in (38—19 mm)
Boilers	2 water tube; 225 psi (15.8 kg/cm²)
Main engines	Triple expansion
	850 ihp; 2 shafts
Speed, knots	12
Radius, miles	2 000 at 10 knots
Oil fuel (tons)	96
Complement	103

In 1966 both ships mounted 2—6 inch, 4—3 inch AA, 2—40 mm AA and 3—20 mm AA guns. A photograph of *Sukothai* appears in the 1962-63 to 1965-66 editions.

Name	Builders	Laid down	Launched	Completed
RATANAKOSINDRA	Armstrongs, Newcastle	29 Sep 1924	21 Apr 1925	Aug 1925
SUKOTHAI	Vickers Armstrong	Dec 1928	19 Nov 1929	Dec 1930



RATANAKOSINDRA Royal Thai Navy, Official

COASTAL MINELAYERS

2 "Bangrachan" Class

BANGRACHAN (No. 1)	NHONG SARHAI (No. 2)
Displacement, tons	368 standard; 408 full load
Dimensions, feet	160.8 × 26 × 7.2
Guns	2—3 in AA; 2—20 mm AA
Mines	142 capacity
Main engines	Burmeister & Wain diesels; 2 shafts; 540 bhp = 12 knots
Oil fuel, tons	18
Radius, miles	2 700
Complement	55

Launched by Cantiere dell'Adriatico, Monfalcone in 1936, No. 2 on 22 July.

A photograph of *Nhong Sarhai* appears in the 1961-62 to 1965-66 editions.



BANGRACHAN Royal Thai Navy, Official

PATROL VESSELS

7 "Trad" Class

CHANDHABURI 16 Dec 1936	No. 22	PUKET 28 Sep 1935	No. 12
CHUMPORN 18 Jan 1937	No. 31	RAYONG 11 Jan 1937	No. 23
PATTANI 16 Oct 1936	No. 13	SURASDRA 28 Nov 1936	No. 21
		TRAD 26 Oct 1935	No. 11

Displacement, tons	318 standard; 470 full load
Dimensions, feet	219 pp; 223 oa x 21 x 7
Guns	3—3 in AA; 1—40 mm AA; 2—20 mm AA
Tubes	4—18 in (2 twin)
Main engines	Parsons geared turbines; 2 shafts; 9 000 hp = 31 knots
Boilers	2 Yarrow
Oil fuel, tons	102
Radius, miles	1 700 at 15 knots
Complement	70

Designed as torpedo boats, *Puket* and *Trad* laid down on 8 Feb 1935 by Cantieri Riuniti dell'Adriatico, Monfalcone, for delivery by end of 1935. Launch dates above. Armament supplied by Vickers-Armstrongs Ltd. First boat reached 32-34 knots on trials with 10 000 hp. All delivered by summer 1937. The 2 single 18 inch torpedo tubes and the 4—8 mm guns were removed. A photograph of *Trad* appears in the 1956-57 to 1964-65 editions.



CHANDHABURI 1965; Royal Thai Navy, Official

4 "Sattahib" Class

KANTANG No. 7	KLONGYAI No. 5	SATTAHIB No. B	TAKBAI No. 6
Displacement, tons	110 standard, 135 full load		
Dimensions, feet	131.5 x 15.5 x 4		
Guns	1—3 in; 1—20 mm		
Tubes	2—18 in		
Main engines	Geared turbines; 2 shafts; 1 000 shp = 19 knots		
Boilers	2 water-tube		
Oil fuel, tons	18		
Complement	31		

Sattahib was built by the Royal Naval Dockyard, Bangkok, laid down on 21 Nov 1956, launched on 28 Oct 1957, completed in 1958. The other three were built by Ishikawajima Co, Japan, all launched on 26 Mar 1937 and completed on 21 June 1937. A photograph of *Klongyai* appears in the 1956-57 to 1964-65 editions.



SATTAHIB 1965, Royal Thai Navy, Official

LIULOM (ex-PC 1253)	PHALI (ex-PC 1185)	SUKRIP (ex-PC 1218)
LONGLOM (ex-PC 570)	SARASIN (ex-PC 495)	THAYANCHON (ex-PC 575)
		TONGPLIU (ex-PC 616)

Displacement, tons	280 standard; 400 full load
Dimensions, feet	174 oa x 23.2 x 6
Guns	1—3 in AA; 1—40 mm AA; 5—20 mm AA
A/S weapons	2 ASW torpedo tubes (except <i>Sarasin</i>)
Main engines	Diesel; 2 shafts; 3 600 bhp = 19 knots
Oil fuel, tons	60
Radius, miles	6,000 et 10 knots
Complement	62 to 71, <i>Sukeip</i> 69 (10 officers, 59 men)

Former US submarine chasers. Launched in 1941-43. Nos. PC 7, 8, 4, 1, 5, 2 and 6, respectively. A photograph of *Sukrip* appears in the 1956-57 to 1964-65 editions.



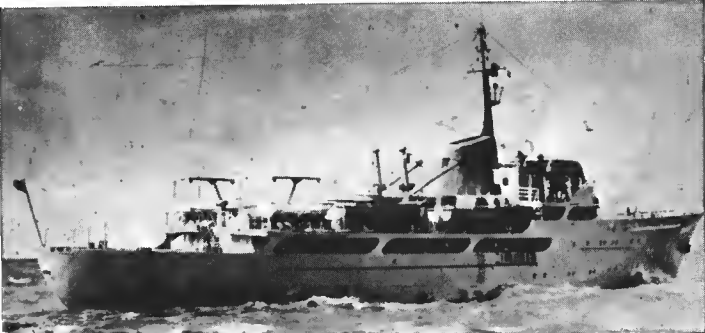
LONGLOM 1965, Royal Thai Navy, Official

SURVEYING VESSEL

CHANTHARA

Displacement, tons	870 standard; 996 full load
Dimensions, feet	229.2 oa x 34.5 x 10
Guns	1—20 mm AA
Main engines	2 diesels; 2 shafts; 1 000 bhp = 13.25 knots
Radius	10 000 miles (cruising)
Complement	69

Built by C. Melchers & Co, Bremen, Germany. Laid down on 27 Sep 1960. Launched on 17 Dec 1960. Can also be used as training ship and yacht.



CHANTHARA 1962, Royal Thai Navy, Official

COASTAL MINESWEEPERS

BANGKEO (ex-USS MSC 303) 6	LADYA (ex-USS MSC 297) 5
DONCHEDI (ex-USS MSC 313) 8	TADINDENG (ex-USS MSC 301) 7

Displacement, tons	330 standard; 362 full load
Dimensions, feet	145.3 oa x 27 x 8.5
Guns	2—20 mm AA
Main engines	4 GM diesels; 2 shafts; 1 000 bhp = 13 knots
Complement	43 (7 officers and 36 men)

Built by Peterson Builders Inc, Sturgeon Bay, Wisc, (*Ladya* and *Donchedi*), Tacoma Boat building Co Tacoma, Wash. (*Tadindeng*) and Dorchester Shipbuilding Corp, Camden (*Bangkeo*). *Ladya* was transferred on 14 Dec 1963, *Bangkeo* on 9 July 1965, *Tadindeng* on 26 Aug 1965, and *Donchedi* on 17 Sep 1965 (last three launched in 1964, 1 July, 11 Apr, 22 Dec). A photograph of *Ladya* appears in the 1964-65 to 1966-67 editions.

Of the ex-US YMS type, *Bangkeo* (ex-YMS 384), *Ladya* (ex-YMS 138) and *Tadindeng* (ex-YMS 21) were removed from the effective list in 1964 and 1965.



TADINDENG 1967

PATROL BOATS

SC 7 (ex-SC 31, ex-US SC 1632)	SC 8 (ex-SC 32, ex-US SC 1633)
---------------------------------------	---------------------------------------

Displacement, tons	110 light; 125 full load
Dimensions feet,	111 x 17 x 6
Guns	1—40 mm; 3—20 mm
A/S weapons	Depth Charges, Mousetrap
Main engines	High-speed diesel = 18 knots

Former US wooden submarine chasers. Built by South Coast Co, Newport Reach, California, in 1954-65. SC 33 (ex-SC 1634) was scrapped 8 Mar 1962.



SC 8 Royal Thai Navy, Official

GUNBOATS

- T 11** (ex-U.S. PGM 71)

Displacement, tons 130 standard; 147 full load

Dimensions, feet 99 wl; 101 oa x 21 x 6

Guns 1—40 mm AA; 4—20 mm AA; 2—50 cal

Main Engines Diesels; 2 shafts; 1 800 bhp = 18.5 knots

Complement 30

PGM 71 was built by Peterson Builders Inc., launched on 5 May 1965, transferred to the Royal Thai Navy on 1 Feb 1966. PGM 107 is building in U.S.A.
- T 12** (ex-U.S. PGM 79)

Displacement, tons 233 standard; 287 full load

Dimensions, feet 153 wl; 158 oa x 23 x 4.25

Guns 1—3 inch; 4—40 mm AA; 4—20 mm AA; 4—81 mm mortar

Main engines Diesels; 2 shafts; 1 320 bhp = 15 knots

Transferred in 1966. Acquired when Japan returned her to U.S.A. Support gunboat.

COASTGUARD VESSELS

- | CGC 13 | CGC 14 | CGC 15 | CGC 16 |
|--|---|--------|--------|
| Displacement, tons 95 | 95 | | |
| Dimensions, feet 95 x 20.2 x 5 | 95 x 20.2 x 5 | | |
| Guns 1—20 mm AA | 1—20 mm AA | | |
| A/S weapons 2 D.C. racks; 2 mousetraps | 2 D.C. racks; 2 mousetraps | | |
| Main engines 4 diesels; 2 shafts; 2 200 bhp = 21 knots | 4 diesels; 2 shafts; 2 200 bhp = 21 knots | | |
| Boilers 1 500 miles cruising range | 1 500 miles cruising range | | |
| Complement 15 | 15 | | |

U.S. coastguard cutters transferred in 1954. Similar to those built for U.S.C.G. by U.S. Coast Guard Yard, Curtis Bay, in 1953. Cost £475,000 each.



CGC 14 Royal Thai Navy Official

- | CGC 11 | CGC 12 |
|--|--------|
| Displacement, tons 44.5 | |
| Dimensions, feet 83.1 x 16 x 4.5 | |
| Guns 1—20 mm AA | |
| A/S weapons 2 DC racks; 2 mousetraps | |
| Main engines 2 Viking petrol engines; 1 300 bhp = 20.5 knots | |

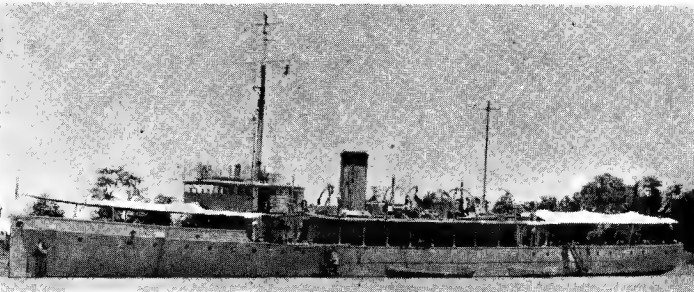
Former U.S. Coast Guard cutters of the YP class. Of wooden hulled construction. A photograph of CGC 12 appears in the 1959-60 to 1966-67 editions.



CGC 11 1967, Royal Thai Navy Official

TRAINING SHIP (Ex-Fleet Minesweeper)

- CHOW PRAYA** (ex-H.M.S. Havant)
- Displacement, tons 680 standard; 840 full load
- Dimensions, feet 220 x 28.2 x 7.5
- Guns 2—57 mm AA; 1—40 mm AA
- Main engines Triple expansion; 2 shafts; 1 hp; 2 200 = 16 knots
- Boilers Yarrow, converted to burn oil
- Oil fuel (tons) 160
- Radius, miles 1 750 at 15 knots
- Complement 65
- Former British fleet minesweeper of the "Racecourse" class. Built by Eltringhams, South Shields. Launched in Nov. 1918. Purchased in 1923 and reconstructed by John I. Thornycroft & Co. Ltd., Southampton. Guns are interchangeable for training.



CHOW PRAYA Royal Navy Thai Official

LANDING SHIPS

- 3 Ex-U.S. LST Type**
- CHANG** (ex-U.S.S. Lincoln County LST 898) LST 2
- PANGAN** (ex-U.S.S. Stark County LST 1134) LST 3
- Displacement, tons 1 625 standard; 4 080 full load
- Dimensions, feet 316 wl; 328 oa x 50 x 14
- Guns 6—40 mm; 4—20 mm
- Main engines GM diesels; 2 shafts; 1 700 bhp = 11 knots
- Complement 80

ANGTHONG LST 1

Displacement, tons 1 625 standard; 4 080 full load

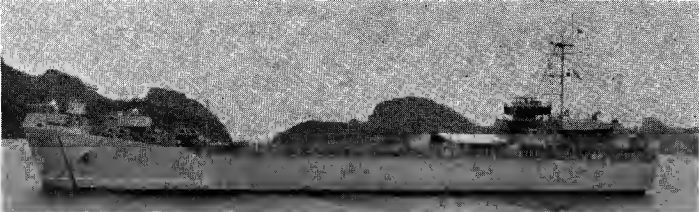
Dimensions, feet 316 wl; 328 oa x 50 x 14

Guns 6—40 mm; 4—20 mm

Main engines GM diesels; 2 shafts; 1 700 bhp = 11 knots

Complement 80

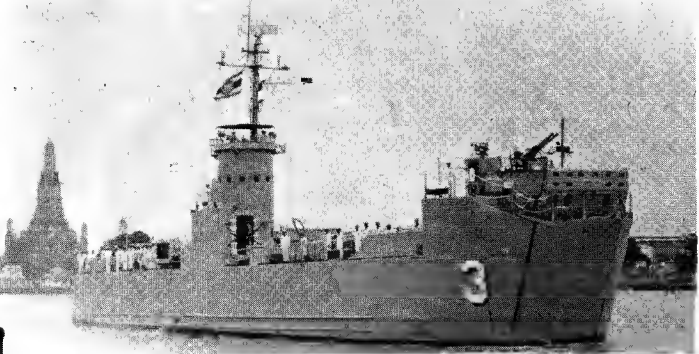
Angthong is employed as a transport. Chang, transferred to Thailand in 1962, was built by Dravo Corp., laid down on 15 Oct 1944, launched on 25 Nov 1944 and completed on 29 Dec 1944. Pangan was transferred on 16 May 1966. A photograph of Angthong appears in the 1956-57 to 1964-65 editions.



CHANG 1965, Royal Thai Navy, Official

- 3 Ex-U.S. LSM Type**
- KRAM** (ex-U.S.S. LSM 469) LSM 3
- KUT** (ex-LSM) LSM 5
- PAI** (ex-LSM) LSM 2
- Displacement, tons 743 standard; 1 095 full load
- Dimensions, feet 196.5 wl; 203.5 oa x 34.5 x 8.3
- Guns 2—40 mm AA
- Main engines Diesel direct drive; 2 shafts; 2 800 bhp = 12.5 knots
- Complement 55

Former United States landing ship of the LCM, later LSM (Medium Landing Ship), type. Kram was transferred to Thailand under MAP at Seattle, Wash. on 25 May 1962; she was built by Brown Shipbuilding Co., Houston, Tex., laid down on 27 Jan 1945, launched on 17 Feb 1945, and completed on 17 Mar 1945. A photograph of Kut appears in the 1956-57 to 1964-65 editions.



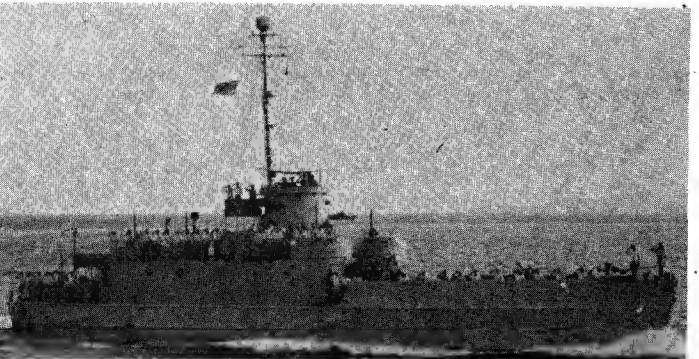
KRAM 1965, Royal Thai Navy, Official

LANDING CRAFT

- 2 Ex-U.S. LCI Type**
- PRAB** (ex-LCI) LCI 1
- SATAKUT** (ex-LCI) LCI 2

- | | |
|---|--|
| Displacement, tons 230 standard; 387 full load | |
| Dimensions, feet 157 x 23 x 6 | |
| Guns 2—20 mm AA | |
| Main engines Diesel; 2 shafts; 1 320 bhp = 14 knots | |
| Complement 54 | |

Former United States landing craft of the LCI (Infantry Landing Craft) type. A photograph of Prab appears in the 1957-58 and earlier editions.



SATAKUT Royal Thai Navy, Official

6 LCU. Ex-U.S. LCT (6) Type

- | | | |
|---|-------------------------|--------------------------|
| ARDANG (LCU 10) | MATAPHON (LCU 8) | RAWI (LCU 9) |
| KOLUM (LCU 12) | PHETRA (LCU 11) | TALIBONG (LCU 13) |
| Displacement, tons 134 standard; 279 full load | | |
| Dimensions, feet 112 x 32 x 4 | | |
| Guns 2—20 mm AA | | |
| Main engines Diesel; 3 shafts; 675 bhp = 10 knots | | |
| Complement 37 | | |

Former United States landing craft of the LCT(6) type. Employed as transport ferries A photograph of Mataphon appears in the 1950-51 to 1961-62 editions.

TRANSPORTS

SICHANG AKL 1

Displacement, tons 815 standard
 Dimensions, feet 160 × 28 × 16
 Main Engines Diesel; 2 shafts; 550 bhp = 16 knots
 Complement 30

Built by Harima Co, Japan. *Sichang* was launched on 10 Nov 1937. Completed in Jan 1938. A photograph of this ship appears in the 1953-54 to 1959-60 editions. Sister ship *Pangan* was deleted from the list in 1962.

KLED KEO A 7

Reefer ship reported to be operating as a naval auxiliary and transport.

OILERS

SAMED

Displacement, tons 305 standard; 485 full load
 Dimensions, feet 108 × 20 × 10 feet
 Main Engines Diesel; 500 bhp = 11 knots

Built by Royal Thai Naval Dockyard, Bangkok. Launched on 8 July 1966.

CHULA AO 2

Displacement, tons 2 395 standard
 Dimensions, feet 328 × 43.2 × 25 feet
 Main Engines Steam turbine

This tanker and *Matra* (see below) were acquired for naval oiling and supply duties.

MATRA AO 3

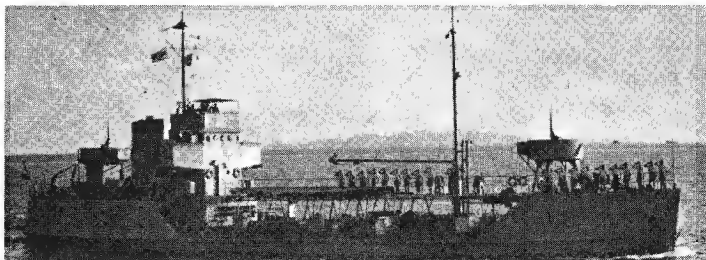
Displacement, tons 4 744
 Dimensions, feet 328 × 45.2 × 20
 Main Engines Steam turbine

Employed as a freighting and fleet replenishment tanker and naval supply ship.

SAMUI YO 4

Displacement, tons 422 standard
 Dimensions, feet 174.5 × 32 × 15
 Main Engines Diesel; 2 shafts; 600 bhp = 8 knots
 Complement 49

Small tanker of the ex-YOG type. Employed as a fleet auxiliary attendant oiler.



SAMUI

Royal Thai Navy, Official

PRONG

Displacement, tons 150 standard
 Dimensions, feet 95 × 18 × 7.5
 Main Engines Diesel; 150 bhp = 10 knots
 Complement 14

Launched in 1938. Employed as a small naval auxiliary servicing tanker.

WATER CARRIERS

CHUANG

Displacement, tons 305 standard; 485 full load
 Dimensions, feet 98 × 18 × 7.2 (official figures)
 Main Engines GM diesel; 500 bhp = 11 knots
 Complement 29

Built by the Royal Thai Naval Dockyard, Bangkok. Launched on 14 Jan 1965.

CHAN YW 6

Displacement, tons 355 standard
 Dimensions, feet 139.5 × 24 × 10
 Main Engines Diesel; Speed = 6 knots

A photograph of this ship appears in the 1956-57 to 1959-60 editions.

TUGS

SAMAESAN (ex-Empire Vincent)

Displacement, tons 503 full load
 Dimensions, feet 105 × 26.5 × 13
 Main Engines Triple expansion; 850 ihp = 10.5 knots
 Complement 27

Built by Cochrane & Sons Ltd, Selby, Yorks, England. A photograph appears in the 1957-58 and earlier editions. Pennant No. YTB 7.

RANG KWIEH MCS 11

Displacement, tons 586 standard
 Dimensions, feet 162.3 × 31.2 × 13
 Main Engines Triple expansion steam engine; Speed = 10 knots

This ship is not employed as a tug but as a mine countermeasures support ship (MCS).

KLUENG BADAN and MARN VICHAI

Displacement, tons 63 standard
 Dimensions, feet 64.7 × 16.5 × 6
 Main Engines Diesel; Speed = 8 knots

RAD

Displacement, tons 52 standard
 Dimensions, feet 60.7 × 17.5 × 5
 Main Engines Diesel; Speed = 6 knots

TOGO

It is reported that Togo, which proclaimed independence on 27 April 1960, has acquired 3 steel 100 ft. motor patrol boats and 1 steel 95 ft. river gunboat and may have in the near future 1 steel 130 ft. patrol vessel.

TRINIDAD & TOBAGO

PATROL CRAFT

2 Vosper Type

COURLAND BAY CG 2**TRINITY CG 1**

Displacement, tons 96 standard; 123 full load
 Dimensions, feet 95 wl; 102.6 oa × 19.7 × 5.5
 Guns: 1—40 mm Bofors
 Main Engines 2 12-cyl Vee-form Paxman Ventura YJCM turbo-charged diesels; 2 910 bhp = 24.5 knots (max.)
 Oil fuel (tons) 18
 Radius, miles 1 800 at 13.5 knots
 Complement 17 (3 officers; 14 ratings)

Designed and built by Vosper Limited, Portsmouth. Of steel construction with aluminium alloy superstructure. Up-to-date radar and navigation equipment is fitted, and the boats are air-conditioned throughout except the engine room. Vosper roll-damping equipment is fitted for improved sea-keeping and greater efficiency and comfort of the crews. Laid down Oct 1963. *Trinity* was launched on 14 Apr 1964. Both were commissioned at Portsmouth on 20 Feb 1965. *Trinity* is named after Trinity Hills, so named by Columbus on making his landfall in 1498, and *Courland Bay* after a bay in Tobago where a settlement was founded by the Duke of Courland in the 17th century.

(*Trinidad & Tobago Coast Guard*:—125 personnel; Three 40 ft. and one 60 ft. patrol craft, all 18 knots).



TRINITY

1965, courtesy Vosper Ltd., Builders

TUNISIA
CORVETTE (*Aviso*)**DUSTUR (ex-Chevreuil F 735) E 71**

Displacement, tons 647 standard; 920 full load
 Dimensions, feet 257 × 28.5 × 10.5
 Guns 1—4.1 inch; 1—40 mm; 6—20 mm
 A/S weapons 4 DCT; 2 DC racks
 Main Engines Sulzer diesels; 2 shafts; 4 000 bhp = 20 knots
 Oil fuel (tons) 100
 Radius, miles 10 000 at 9 knots; 5 200 at 15 knots
 Complement 100 (8 officers, 92 men)

Built at Lorient Dockyard. Laid down in Apr 1937, launched on 17 June 1939 and completed in Oct 1939. Transferred from the French Navy on 13 Oct 1959 and renamed. Sister ship of *El Lahiq* (ex-*Chamois*) in the Moroccan Navy.



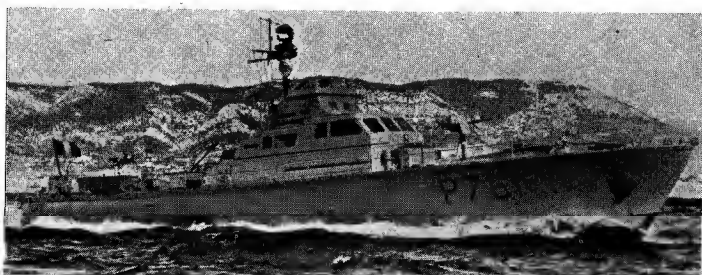
DUSTUR

1964 A. & J. Pavia

PATROL CRAFT (*Vedette de Port*)**ISTIQLAL (ex-VC 11, P 761)**

Displacement, tons 75 standard; 82 full load
 Dimensions, feet 104.5 × 15.5 × 5.5
 Guns 2—20 mm AA
 Main Engines 2 Mercedes-Benz diesels; 2 shafts; 2 700 bh = 28 knots
 Radius, miles 1 500 at 15 knots
 Complement 15

Seaward defence motor launch of the VC type. Completed in 1958. Built by Lurssens in Germany. Transferred from the French Navy on 22 Sep 1959.



ISTIOLAL

Ex-VC 11

TURKEY

Administration

Commander-in-Chief, Turkish Naval Forces:
Oramiral (Senior Admiral) Necdet Uran

Chief of Staff, Turkish Naval Forces:
Tümamiral (Vice-Admiral) Kemal Kayakan

Commander of the Turkish Fleet:
Koramiral (Admiral) Celâl Eyiceoglu

Diplomatic Representation

Naval Attaché in London:
Captain Fuat Basol

Naval Attaché in Washington:
Captain Erdogan Yazici

Personnel

1967: 2,740 officers and 33,320 ratings

Mercantile Marine

Lloyd's Register of Shipping:
281 vessels of 640, 334 tons gross

Strength of the Fleet

10 Submarines	12 Coastal Minesweepers
10 Destroyers	6 Patrol Vessels
7 Minelayers	30 Motor Launchers
18 Escorts	6 Boom Vessels
12 MTBs	10 Support Ships

Silhouettes

Scale: 150 feet 1 inch



ALP ARSLAN Class



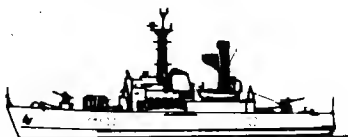
GELIBOLU GİRESUN



CANDARLI Class,



GAZİANTEP, GEMLIK



NUSRET



ALANYA Class

SUBMARINES

Name	Nato No.	Turk No.	Builders	Launched	Completed
BİRİNCİ İNÖNÜ (ex-USS <i>Brill</i> , SS 330)	S 330	—	Electric Boat Co	25 June 1944	26 Oct 1944
CANAKKALE (ex-USS <i>Bumper</i> , SS 333)	S 333	21	Electric Boat Co	6 Aug 1944	9 Dec 1944
CERBE (ex-USS <i>Hammerhead</i> , SS 364)	S 341	03	Manitowoc SB Co	27 Oct 1943	1 Mar 1944
GÜR (ex-USS <i>Chub</i> , ex- <i>Bonaf</i> , SS 329)	S 334	20	Electric Boat Co	7 May 1944	28 Apr 1945
HİZİR REİS (ex-USS <i>Mero</i> , SS 37B)	S 344	—	Manitowoc SB Co	17 Jan 1945	17 Aug 1945
İKİNCİ İNÖNÜ (ex-USS <i>Blueback</i> , SS 326)	S 331	17	Electric Boat Co	21 May 1944	23 Sep 1944
PIRİ REİS (ex-USS <i>Mapiro</i> , SS 376)	S 343	—	Manitowoc SB Co	9 Nov 1944	30 Apr 1945
PREVEZE (ex-USS <i>Guitarro</i> , SS 363)	S 340	22	Manitowoc SB Co	26 Sep 1943	16 Jan 1944
SAKARYA (ex-USS <i>Boarfish</i> , SS 327)	S 332	—	Electric Boat Co	18 June 1944	21 Oct 1944
TURGUT REİS (ex-USS <i>Bergall</i> , SS 320)	S 342	—	Electric Boat Co	16 Feb 1944	12 June 1944

10 "Gur" Class

Displacement, tons	1 526 standard; 1 829 surface; 2 424 submerged
Length, feet (metres)	311.8 (95.0)
Beam, feet (metres)	27.2 (8.3)
Draught, feet (metres)	13.8 (4.2)
Guns, surface	1—5 in (127 mm) 25 cal., removed from most boats
Torpedo tubes	10—21 in (533 mm), 6 bow and 4 stern; 24 torpedoes carried
Main engines	GM 2-stroke diesels, total 6 500 hp Electric motors, total 2 750 hp
Speed, knots	20 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	85

Former US submarines of the "Balao" type acquired by Turkey in 1948-60. All built by the Electric Boat Company, Groton, Connecticut, except *Cerbe*, *Hizir Reis*, *Piri Reis* and *Preveze*, by Manitowoc Shipbuilding Co. Of all-welded construction. High standard of accommodation including separate messing and sleeping compartments. *Canakkale*, officially transferred in 1950, was semi-streamlined before delivery. *Dumlupinar* (ex-*Blower*) was lost in the Dardanelles on 4 Apr 1953. *Preveze* semi-streamlined and *Cerbe*, fully streamlined, were transferred on 7 Aug 1954 and Oct 1954 respectively. *Cerbe* and *Preveze* are "guppy snorkel" conversions. Their loan was extended for five years in 1959, *Sakarya* was overhauled by the Electric Boat Division of the General Dynamics Corporation (formerly known as the Electric Boat Company), Groton, in 1957. *Turgut Reis* was transferred in Oct 1958 and *Hizir Reis* and *Piri Reis* on 20 Apr 1960 and 18 Mar 1960 at San Francisco Naval Shipyard.

PHOTOGRAPHS. A photograph of *Preveze* appears in the 1959-60 to 1961-62 editions, of *Gür* in the 1958-59 to 1961-62 editions, of *Birinci Inonu* in the 1953-54 to 1961-62 editions, of *Canakkale* in the 1962-63 and 1963-64 editions, of *Piri Reis* in the 1962-63 to 1965-66 editions, and of *Turgut Reis* in the 1959-60 to 1965-66 editions.

DISPOSALS OF OLDER SUBMARINES

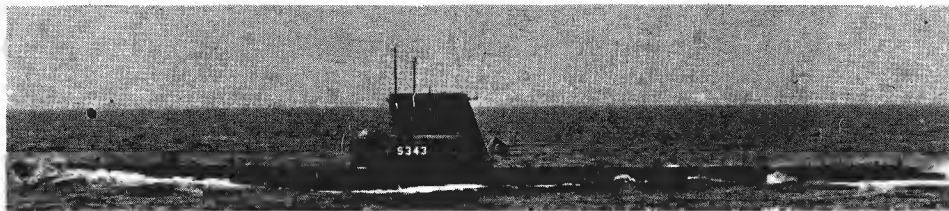
Burak Reis, *Murat Reis* and *Oruc Reis*, of the "Burak Reis" class, and *Saldıray* and *Yıldırım* of the "Saldıray" class, were discarded in 1957.

BATTLE CRUISER. The very old Turkish (former German battle cruiser *Yavuz* (ex-*Goeben*), decommissioned in 1960, was still awaiting a buyer in 1967.



SAKARYA

1966, A. & J. Pavia



PIRİ REİS

1966, Turkish Navy, official



İKİNCİ İNÖNÜ

1966, A. & J. Pavia



HİZİR REİS

1964, Turkish Navy, official

DESTROYERS

Name	No.	Builders	Laid down	Launched	Completed
ALP ARSLAN (ex-HMS <i>Milne</i>)	D 348	Scotts' Shipbuilding & Eng Co Ltd, Greenock	24 Jan 1940	30 Dec 1941	6 Aug 1942
KILIC ALI PASA (ex-HMS <i>Matchless</i>)	D 350	Alex Stephen & Sons Ltd, Govan, Glasgow	14 Sep 1940	4 Sep 1941	26 Feb 1942
MARESAL FEVZI ÇAKMAK (ex-HMS <i>Marne</i>)	D 349	Vickers Armstrongs, Ltd, Newcastle on-Tyne	23 Oct 1940	30 Oct 1940	2 Dec 1941
PIYALE PASA (ex-HMS <i>Meteor</i>)	D 351	Alex Stephen & Sons Ltd, Govan, Glasgow	14 Sep 1940	3 Nov 1941	12 Aug 1942

Ex-British "Milne" Type

4 "Alp Arslan" Class

Displacement, tons 2 115 standard; 2 840 full load
Length, feet (metres) 354 (107.9) pp; 362.5 (110.5) oa
Beam, feet (metres) 36.8 (11.2)
Draught, feet (metres) 16.2 (5.0)
Guns, surface 6—4.7 in (120 mm)
Guns, AA 6—40 mm (1 twin, 4 single)
Guns, saluting 2—3 pdr
A/S 1 Squid triple-barrel DC mortar
Torpedo tubes 4—21 in (533 mm)
Boilers 2 Admiralty 3-drum
Main engines Parsons geared turbines
48 000 shp; 2 shafts
Speed, knots 36
Radius, miles 1 700 at 20 knots
Oil fuel (tons) 500
Complement 240



MARESAL FEVZI ÇAKMAK 1966, A. & J. Pavia

Former "Milne" class, one of the most successful and handsome types which ever served in the Royal Navy. The first British destroyers with three power worked turrets. Transferred to Turkey under an agreement signed in Ankara on 16 Aug 1957. Nominally handed over to the Turkish Navy at Portsmouth on 29 June 1959 after refit in British shipyards, where the after tubes and secondary armament were removed and replaced by deckhouse, "Squid" and 40 mm guns. Renamed after famous generals and 16-18th century admirals.

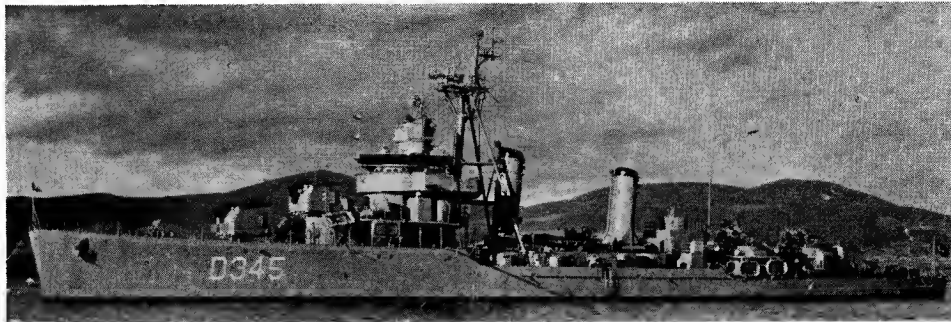
PHOTOGRAPHS. A photograph of *Alp Arslan* appears in the 1959-60 to 1961-62 editions and of *Kilic Ali Pasa* in the 1962-63 to 1965-66 editions.

DISPOSAL OF OLDER DESTROYERS. *Gayret* was officially deleted from the list in 1965. *Demishiar*, *Muavenet* and *Sultanhisar* were discarded in 1960, and *Tinaztepe* and *Zafer* in 1957.

Name	No.	Builders	Laid down	Launched	Completed
GAZIANTEP (ex-USS <i>Lansdowne</i> , DD 486)	D 344	Federal SB & DD Co, Port Newark	July 1941	20 Feb 1942	29 Apr 1942
GELIBOLU (ex-USS <i>Buchanan</i> , DD 484)	D 346	Federal SB & DD Co, Port Newark	11 Feb 1941	22 Nov 1941	21 Mar 1942
GEMLIK (ex-USS <i>Lardner</i> , DD 487)	D 347	Federal SB & DD Co, Port Newark	July 1941	20 Mar 1942	13 May 1942
GIRESUN (ex-USS <i>McCalla</i> , DD 488)	D 345	Federal SB & DD Co, Port Newark	July 1941	20 Mar 1942	27 May 1942

4 "Gelibolu" Class

Displacement, tons 1 810 standard; 2 580 full load
Length, feet (metres) 341 (103.9) wl; 348.5 (106.2) oa
Beam, feet (metres) 36 (11.0)
Draught, feet (metres) 18 (5.5)
Guns, surface D345, D346: 3—5 in (127 mm) 38 cal; D344, D347: 4—5 in (127 mm) 38 cal.
Guns, AA D345, D346: 4—3 in (76 mm) D344, D347: 4—40 mm
A/S 2 Hedgehogs; homing torpedoes; 4 DCT
Torpedo tubes 5—21 in (533 mm)
Boilers 4 Babcock & Wilcox
Main engines GE geared turbines
50 000 shp; 2 shafts
37 designed; 34 max
Speed, knots 5 000 at 15 knots
Radius, miles 600
Oil fuel (tons) 250
Complement 250



GIRESUN 1966, Turkish Navy, Official

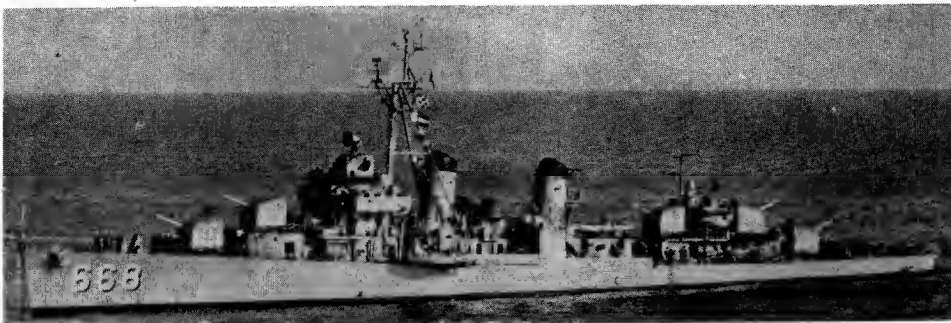
Former United States destroyers of the "Gleaves" class acquired by Turkey early in 1949. *Gelibolu* and *Giresun* were formally taken over on 29 Apr 1949, and *Gaziantep* and *Gemlik* in 1950. Modernised in the United States in 1957-58 and fitted with tripod foremast and raised bridge.

PHOTOGRAPHS: A photograph of *Gelibolu* with pole gunnery. The 5 inch gun in "X" position, 40 mm AA guns and 20 mm AA guns in *Gelibolu* and *Giresun* were replaced by four 3-inch AA guns in two twin mountings.

Name	No.	Builders	Launched	Completed
ISTANBUL (ex-USS <i>Clarence K. Bronson</i> , DD 668)	D 340	Federal SB & DD Co, Port Newark	18 Apr 1943	11 June 1943
IZMIR (ex-USS <i>Van Valkenburgh</i> , DD 656)	D 341	Gulf Shipbuilding Corporation	19 Dec 1943	2 Aug 1944

2 Later "Fletcher" Class

Displacement, tons 2 050 standard; 3 050 full load
Length, feet (metres) 376.2 (114.7) oa
Beam, feet (metres) 39.7 (12.1)
Draft, feet (metres) 18 (5.5)
Guns, surface 5—5 in (127 mm) 38 cal
Guns, AA 10—40 mm
A/S weapons 2 Hedgehogs
Torpedo tubes 5—21 in (533 mm) quintupled
Boilers 4 Babcock & Wilcox
Main engines GE geared turbines
60 000 shp; 2 shafts
Speed, knots 34
Radius, miles 6 000 at 15 knots
Oil fuel, tons 650
Complement 18 officers, 320 men



ISTANBUL Added, 1967

Transferred from the US Navy at Philadelphia on 14 Jan and 28 Feb 1967, respectively.

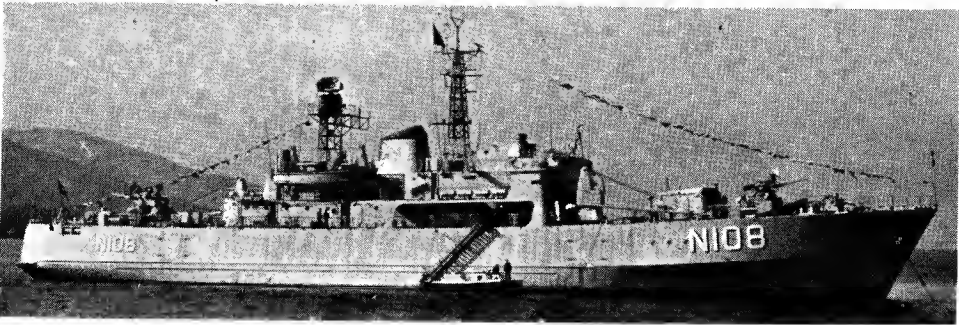
MINELAYER

1 "Scanato" Type

NUSRET N 108

Displacement, tons 1 880 standard
Length, feet (metres) 246 (75 0) pp; 252·7 (77·0) oa
Beam, feet (metres) 41 (12·6)
Draught, feet (metres) 11 (3·4)
Guns, dual purpose 4—3 in (76 mm), 2 twin mountings
Mines 400 capacity
Main engines GM diesels, 4 800 hp; 2 shafts
Speed, knots 18
Complement 130

A new type of minelayer of special Scandinavian-NATO design. Built at Frederikshaven Dockyard, Denmark. Laid down in 1962, launched in 1964, and completed in 1965. Commissioned on 16 Sep 1964 at Copenhagen.



NUSRET

1965, Turkish Navy, Official

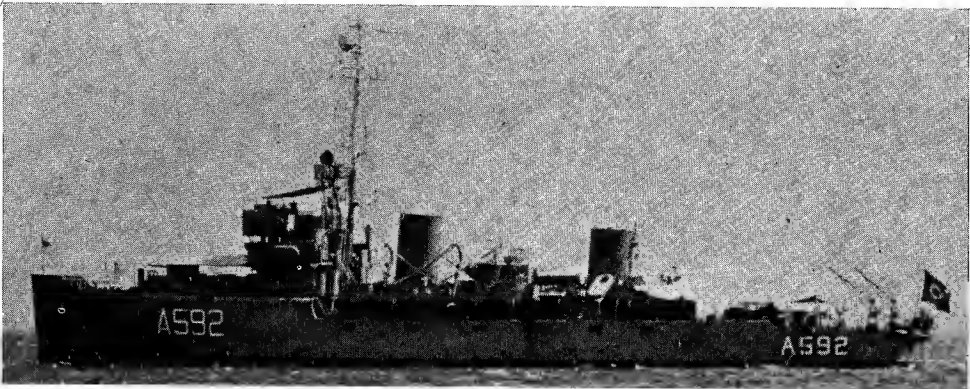
ESCORT MINESWEEPERS

6 "Candarlı" Class

CANDARLI (ex-Fralic, 22 July 1943) AGS 2
CARDAK (ex-Tourmaline, 4 Oct, 1942) A 596
CARSAMBA (ex-Tattoo, 27 Jan 1943) AGS 1
CESME (ex-Elfreda, 25 Jan 1943) A 595
EDINCİK (ex-Grecian, 1943) A 598
EREGLI (ex-Pique, 26 Oct 1942) A 592

Displacement, tons 1 010 standard; 1 250 full load
Length, feet (metres) 215 (61·4) wl; 221 (67·4) oa
Beam, feet (metres) 32 (9·8)
Draught, feet (metres) 10·8 (3·3)
Guns, dual purpose 1—3 in (76 mm)
Guns, AA 6—40 mm
A/S 4 DCT
Main engines Diesels, with electric drive
3 500 bhp; 2 shafts
Speed, knots 18
Complement 105

Former US steel hulled fleet minesweepers of the "Auk" type. Transferred to Great Britain while under construction. Served in the Royal Navy. Retrained to Turkey in Apr 1947. Built by Associated Shipbuilders, Cleveland (Carsamba, Cesme and Edincik); General Engineering & DD Co, Alameda (Candarlı) and Gulf Shipbuilding Corporation, Houston (Cardak and Eregli).



EREGLI

1964, Turkish Navy, Official

Launch dates above. Named after Turkish ports. Cesme and Cardak are Headquarter Ships. Eregli is Logistic Support Ship, Edincik and Erdemli are Training Ships, Carsamba and Candarli are Survey Ships.

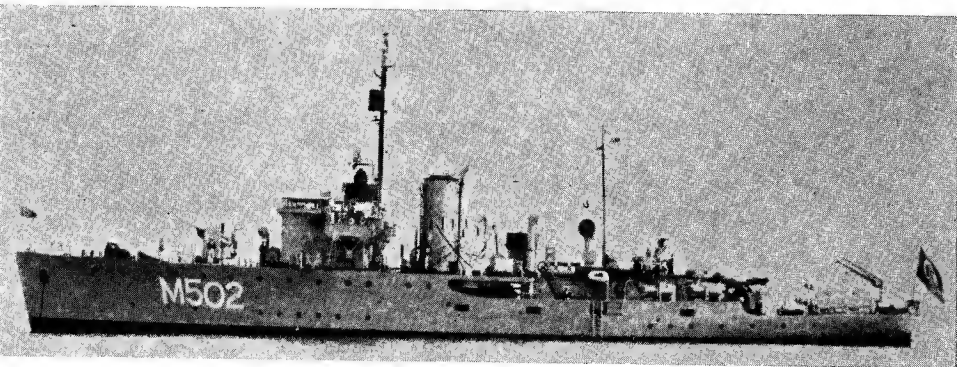
Ex-British "Bathurst" Type

3 "Alanya" Class

Displacement, tons 790 standard; 1 025 full load
Length, feet (metres) 162 (49·4) pp; 186 (56·7) oa
Beam, feet (metres) 31 (9·4)
Draught, feet (metres) 8·5 (2·6)
Guns, surface 1—4 in (102 mm)
Guns, AA 1—40 mm; 4—20 mm
A/S 2 DCT
Main engines Triple expansion
1 800 ihp; 2 shafts
Speed, knots 15·5
Radius, miles 4 500 at 10 knots
Oil fuel (tons) 170
Complement 85

All Australian built, 1940-42. Served in the Royal Navy. Acquired from Great Britain in Aug 1946. Named after Turkish ports. All are now Logistic Support Ships. Hamit Naci (ex-Ayancik, ex-Launceston) was withdrawn from service in 1965, and Ayvalik (ex-Gawler) in 1963. A photograph of Alanya appears in the 1951-52 to 1963-64 editions.

Name	No.	Builders	Launched
ALANYA (ex-Broome)	M 501	Evans Deakin, Brisbane	6 Oct 1941
AMASRA (ex-Pirie)	M 502	Broken Hill, Whyalla	Dec 1941
AYVALIK (ex-Antalya, ex-Geraldton)	M 500	Poole & Steele, Sydney	16 Aug 1941



AMASRA

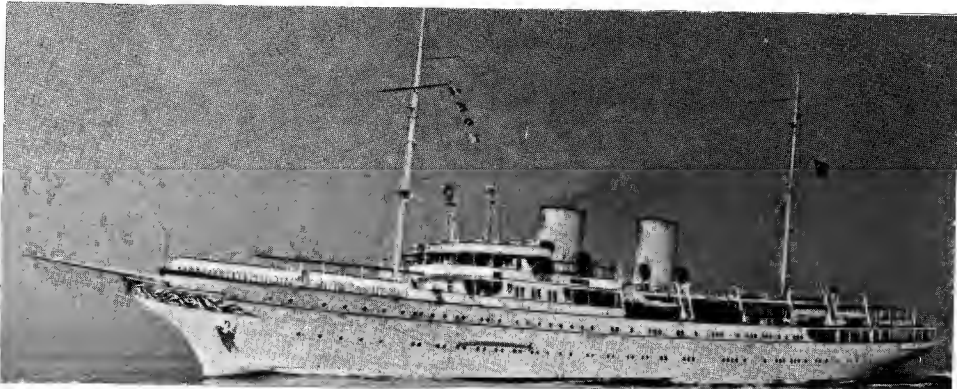
1964, Turkish Navy, Official

TRAINING SHIP

SAVARONA

Displacement, tons 5 100
Length, feet (metres) 349·5 (106·5)wl; 408·5 (124·5)oa
Beam, feet (metres) 53 (16·2)
Draught, feet (metres) 20·5 (6·2) mean
Guns, surface 4—3 in (76 mm)
Guns, AA 2—40 mm; 2—20 mm
Boilers 4 watertube; 400 psi
Main engines 6 geared turbines
10 750 shp; 2 shafts
Speed, knots 21 designed; about 18 now
Radius, miles 9 000 at 15 knots
Oil fuel (tons) 2 100
Complement 132 + 81 midshipmen

Built by Blohm & Voss, Hamburg. Launched on 28 Feb 1931. Formerly probably the most sumptuously fitted yacht afloat. Equipment includes Sperry gyro-stabilisers. Converted into a training ship in 1952, the saloons and dining rooms being adapted as classrooms, workshops and libraries for 120 midshipmen.



SAVARONA

1965, Turkish Navy, Official

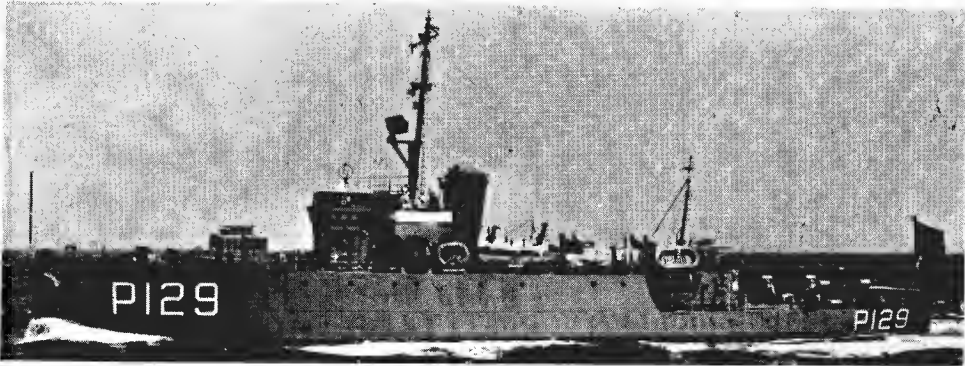
COASTAL ESCORTS (ex-Fleet Minesweepers)

Ex-Canadian "Bangor" Type

9 "Bafra" Class

Displacement, tons	672 standard; 900 full load
Length, feet (metres)	171.5 (52.3) pp; 180 (54.8) oa
Beam, feet (metres)	28.5 (8.7)
Draught, feet (metres)	12.5 (3.8) max
Guns, AA	1—40 mm; 6—20 mm
A/S	1 Hedgehog; 4 DCT
Boilers	2 Admiralty 3 drum
Main engines	Triple expansion; 2 400 ihp; 2 shafts
Speed, knots	16.5
Complement	70

Name	No.	Launched
BAFRA (ex-HMCS Nipigon, FSE 188)	P 121	30 Sep 1940
BANDIRMA (ex-HMCS Kenora, FSE 191)	P 129	20 Dec 1941
BARTIN (ex-HMCS Kentville, FSE 182)	P 130	18 Apr 1942
BEYKOZ (ex-HMCS Blairmore, FSE 193)	P 122	14 May 1942
BEYLERBEYI (ex-HMCS Mahone, FSE 192)	P 123	15 Nov 1940
BODRUM (ex-HMCS Fort William, FSE 195)	P 125	30 Dec 1941
BORNOVA (ex-HMCS Westmount, FSE 187)	P 126	14 Mar 1942
BOZCAADA (ex-HMCS Swift Current, FSE 185)	P 127	29 May 1941
BUYUKDERE (ex-HMCS Sarnia, FSE 190)	P 128	21 Jan 1942



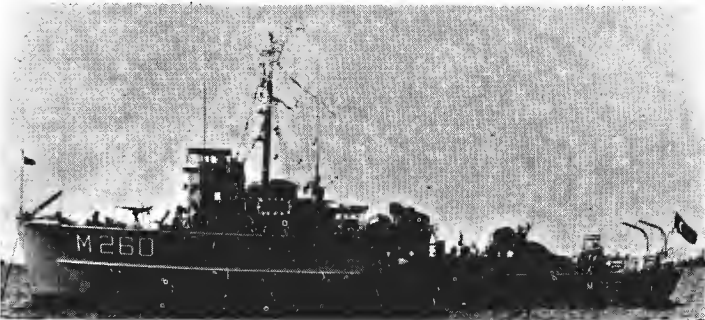
BANDIRMA 1966, Turkish Navy, Official

Former Canadian fleet minesweepers, rerated coastal escorts in 1953. Transferred to Turkey in 1957. *Bafra*, *Bandirma*, *Bartın* and *Bodrum* were turned over 29 Nov 1957 at Point Edward Naval Base, Sydney, NS, and *Beykoz*, *Beylerbeyi*, *Bornova*, *Bozcaada* and *Buyukdere* early 1958. All sailed from Canada to Turkey on 19 May 1958. *Biga* (ex-HMCS *Medicine Hat*, FSE 197) was withdrawn from service in 1963.

COASTAL MINESWEEPERS

SAMSUN M 257 (ex-U.S.A. MSC 268)	SIGACIK M 265 (ex-U.S.S. MSC 311)
SAPANCA M 266 (ex-U.S.S. MSC 312)	SILIFKE M 263 (ex-U.S.S. MSC 304)
SAROS M 264 (ex-U.S.S. MSC 305)	SINOP M 258 (ex-U.S.S. MSC 270)
SEDDULBAHIR M 260 (ex-MSK 272)	SURMENE M 259 (ex-U.S.S. MSC 271)
Displacement, tons	320 standard 370 full load
Dimensions, feet	138 pp; 144 oa x 28 x 9
Guns	2—20 mm AA
Main Engines	2 diesels; 2 shafts; 1 200 bhp = 14 knots
Oil fuel (tons)	25
Radius, miles	2,500 at 10 knots
Complement	38 (4 officers, 34 men)

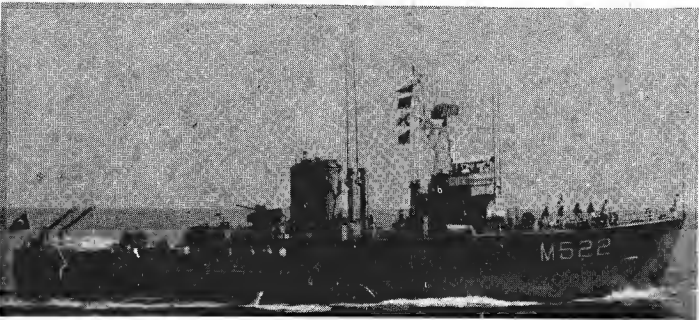
Constructed of wood and non-magnetic materials. Transferred on 30 Sep 1958, 7th July 1965, 8 Nov 1965, 9 July 1959, 29 May 1965, 25 Oct 1965, 30 Jan 1959 and 27 Mar 1959, respectively, under MAP. Another, MSC 315, was launched on 21 Apr 1966.



SEDDULBAHIR 1966, Turkish Navy, Official

TIREBOLU M 524 (ex-H.M.C.S. <i>Comax</i>)	TERME M 523 (ex-H.M.C.S. <i>Trinity</i>)
TEKIRDAG M 525 (ex-H.M.C.S. <i>Ungava</i>)	TRABZON M 522 (ex-H.M.C.S. <i>Gaspe</i>)
Displacement, tons	390 standard; 412 full load
Dimensions, feet	140 pp; 152 oa x 28 x 7
Guns	1—40 mm
Main Engines	Diesels; 2 shafts; 2 400 bhp = 16 knots
Oil fuel (tons)	52
Radius, miles	4 500 at 11 knots
Complement	40

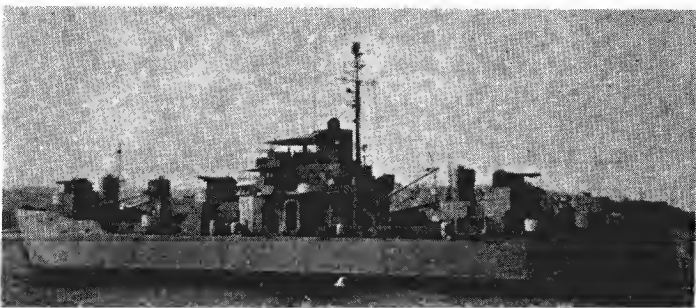
Ex-Canadian MCBs. Sailed from Sydney, Nova Scotia, to Turkey on 19 May 1958. A photograph of *Terme* appears in the 1959-60 to 1966-67 editions.



TRABZON 1967, Turkish Navy, Official

COASTAL MINELAYERS

MARMARIS (ex-LSM 481) N 100	MERSIN (ex-LSM 492) N 103
MERIC (ex-LSM 490) N 102	MORDOGAN (ex-LSM 494) N 101
	MUREFTE (ex-LSM 493) N 104
Displacement, tons	743 standard; 1 100 full load
Dimensions, feet	196.5 wl; 203.2 oa x 34.5 x 8.5
Guns	2—40 mm AA; 2—20 mm AA
Main Engines	Diesels; 2 shafts; 2 880 bhp = 12 knots
Oil fuel (tons)	60
Radius, miles	2 500 at 10 knots
Complement	70
Ex-U.S. Lending Ships Medium. All launched in 1945, converted into coastal minelayers by the U.S. Navy in 1952 and taken over by the Turkish Navy (LSM 481, 484 and 490) and the Norwegian Navy (LSM 492 and 493) in Oct 1952 under MAP. LSM 492 (Va/e) and LSM 493 (<i>Vidar</i>) were retransferred to the Turkish Navy on 1 Nov 1960 at Bergen, Norway.	



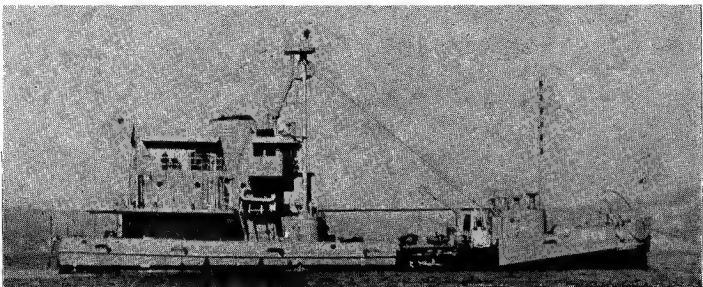
MARMARIS 1966, Turkish Navy, Official

MEHMEDCIK (ex-U.S.S. YMP 3) N 105

Displacement, tons	540 full load
Dimensions, feet	130 x 35 x 6
Main Engines	Diesels; 2 shafts; 600 bhp = 10 knots
Complement	22

Former U.S. motor mine planter. Built by Higgins Inc, New Orleans. Completed in 1958. Steel hulled. Transferred under MAP in 1958. For harbour defence.

DISPOSALS. Of the "K" Class, former U.S. YMS type, *Kas* (ex-YMS 79) and *Kilimli* (ex-YMS 289) were withdrawn from service in 1963, *Kozlu* (ex-YMS 375) and *Kusadasi* (ex-YMS 468) in 1965, and *Karamursel* (ex-Kulluck ex-YMS 348), *Kamer* (ex-YMS 228), *Kerempe* (ex-YMS 239) and *Kirte* (ex-YMS 307) in 1966.



MEHMEDCIK 1965, Turkish Navy, Official

PATROL VESSELS

6 "Akhisar" Class

AKHISAR P 114 (ex-PC 1641) **SIVRIHISAR** P 115 (ex-PC 1643)
DEMIRHISAR P 112 (ex-PC 1639) **SULTANHISAR** P 111 (ex-PC 1638)
KOCHISAR P 116 (ex-PC 1642) **YARHISAR** P 113 (ex-PC 1640)

Displacement, tons 280 standard; 412 full load
Dimensions, feet 170 wl; 173.7 oa x 23 x 10.2
Guns 1—3 inch dp; 1—40 mm AA
A/S weapons 4 DCT
Main Engines 2 FM Diesels; 2 shafts; 2 800 bhp = 19 knots
Complement 65 (5 officers and 60 men)

Similar to U.S. 173 ft. class submarine chasers. Built by Gunderson Bros. Engineering Co., Portland, Oregon, except *Kochisar* built in Gölcük Dockyard, Turkey. Transferred on 3 Dec 1964, 22 Apr 1965, 22 Apr 1965, 2 May 1964, 24 Sep 1964 and 22 Apr 1965 respectively. PC 1645 is building in U.S.A.

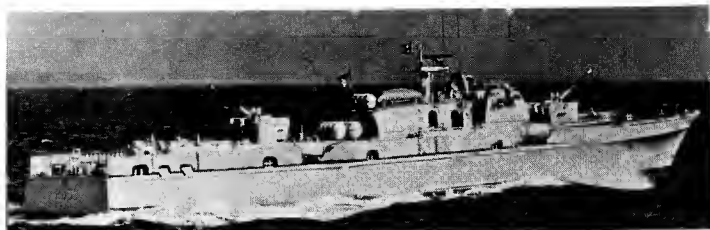
GUNBOATS PGM 72, 104, 105, 106, 108 building in U.S.A. for transfer to Turkey.



SULTANHISAR 1966, Turkish Navy, Official

MOTOR TORPEDO BOATS

10 "Kartal" Class



KARTAL 1967, Turkish Navy, Official

ATMACA **DENİZ KUSU** **KASIRGA** **SAHİN** **TAYFUN**
BOGA **KARTAL P333** **MELTEM** **SİMSEK** **YILDIRIM**

Displacement, tons 160 standard; 180 full load
Dimensions, feet 140.5 x 23.5 x 7.2
Guns 2—40 mm AA
Tubes 4—21 inch
Main Engines 4 Maybach diesels; 4 shafts; 12 000 bhp = 12 knots
Of the German "Jaguar" type. Built by Lürssen, Vegesack, in 1966-67.

DOĞAN (ex-Hugin) **MARTİ** (ex-Munin)

Displacement, tons 70 standard; 75 full load
Dimensions, feet 75.5 pp; 80.3 oa x 24.5 x 6.8
Guns 1—40 mm AA
Tubes 2—21 inch
Main Engines 2 Napier Deltic turbo blown diesels; 6 200 bhp = 43 knots

Transferred under a German-Turkish war reparations plan from West Germany and re-named. "Nasty" type, built by Boat Services Ltd, A/S in 1959-60. A photograph of *Dogan* appears in the 1966-67 edition.

REPAIR SHIPS

BASARAN (ex-Patroclus, ARL 19, ex-LST 955) A 582
ONARAN (ex-Alecto, AGP 14, ex-LST 558) A 581

Displacement, tons 1 625 standard; 3 960 to full load
Dimensions, feet 316 wl; 328 oa x 50 x 11
Guns 2—40 mm AA; 8—20 mm AA
Main Engines Diesel; 2 shafts; 1 700 bhp = 11 knots
Oil fuel (tons) 1 000
Radius, miles 6 000 at 9 knots

Former U.S. repair ship and MTB tender, respectively, of the LST type. *Basaran* was launched on 22 Oct 1944 by Bethlehem Hingham Shipyard, *Onaran* on 14 Apr 1944 by Missouri Valley Bridge & Iron Co. Acquired from the U.S.A. in 1952 and 1947, respectively. Photograph of *Basaran* in the 1965-66 and 1966-67 editions.



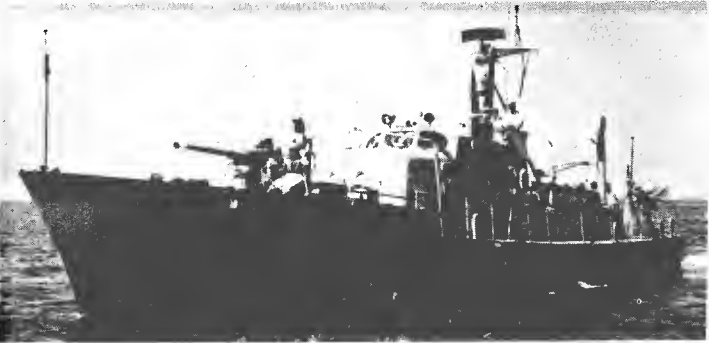
ONARAN 1967, Turkish Navy, Official

MOTOR LAUNCHES

J 12 J 13 J 14 J 15 J 16 J 17 J 18 J 19 J 20

Displacement, tons 70
Dimensions, feet 95 x 15.5 x 4.2
Main Engines 4 MB diesels; 2 shafts; 2 700 bhp = 29 knots

Cutters of U.S.C.G. type built in 1960-61 by Schweers, Bardenfleth. A photograph of J 12 appears in the 1962-63 to 1965-66 editions.



J 19 1966, Turkish Navy, Official

AB 1 (ex-ML 386) P 321 **AB 4** (ex-ML 837) P 324 **AB 7** (ex-ML 862) P 327
AB 2 (ex-ML 584) P 322 **AB 5** (ex-ML 838) P 325 **AB 8** (ex-ML 863) P 328
AB 3 (ex-ML 836) P 323 **AB 6** (ex-ML 842) P 326

Displacement, tons 85 standard; 115 full load
Dimensions, feet 112 x 17.8 x 4
Guns 1—3 pdr; 2—20 mm AA; 4 MG
Main Engines 2 Hall-Scott engines; 1 120 bhp = 21 knots
Oil fuel (tons) 12
Complement 18

Fairmile B type. Launched in 1940-42. Transferred in 1947. Pennant numbers (NATO) above. A photograph of AB 2 appears in the 1947-48 to 1960-61 editions, and of AB 7 in the 1961-62 to 1965-66 editions.



AB 6 1966, Turkish Navy, Official

LS 9 P 339 **LS 10** P 308 **LS 11** P 309 **LS 12** P 310

Displacement, tons 63
Dimensions, feet 83 x 14 x 5
Guns 1—20 mm AA
Main Engines 2 Cummins; 1 100 bhp
Ex-U.S. type, transferred on 25 June 1953. P pennant numbers (NATO) above.



LS 12 1961, Giorgio Arra

MTB 1 P 311 **MTB 3** P 313 **MTB 6** P 316 **MTB 8** P 318
MTB 2 P 312 **MTB 4** P 314 **MTB 7** P 317 **MTB 9** P 319
MTB 10 P 320

Displacement, tons 70
Dimensions, feet 71.5 x 13.8 x 8.5 (max)
Main Engines Diesel; 2 000 bhp = 10 knots

All launched in 1942. General purpose craft. P pennant numbers (NATO) above. Photograph of MTB 9 in the 1957-58 edition. MTB 5 (P 315) was scrapped.

SUBMARINE RESCUE SHIP

KURTARAN (ex-*Bluebird*, ASR 19, ex-*Yurak*) A 584
 Displacement, tons 1 294 standard; 1 675 full load
 Dimensions, feet 205 oa × 38.5 × 12
 Guns 1—3 inch; 2—40 mm AA
 Main Engines Diesel-electric; 3 000 bhp = 16 knots
 Built by Charleston S.B. & D.D. Co. Launched in 1946. Former salvage tug, adapted as a submarine rescue vessel in 1947. Transferred from the US Navy on 15 Aug 1950.



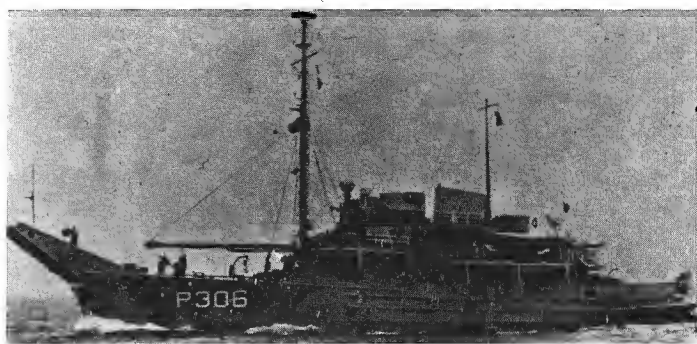
KURTARAN

1966, Turkish Navy, Official

BOOM DEFENCE VESSELS

AG 5 P 306

Displacement, tons 680 standard; 960 full load
 Dimensions, feet 148.7 pp; 173.8 oa × 35 × 13.5
 Guns 1—40 mm AA; 3—20 mm AA
 Main Engines 4 MAN diesels; 2 shafts; 1 450 bhp = 12 knots
 Netlayer AN 104 built in U.S. off-shore programme by Kröger, Rendsburg for Turkey. Launched on 20 Oct 1960. Delivered on 25 Feb. 1961.



AG 5

1964 Turkish Navy Official

AG 4 (ex-*Larch*, ex-AN 21) P 304

Displacement, tons 560 standard; 805 full load
 Dimensions, feet 146 wl; 163 oa × 30.5 × 10.5
 Guns 1—3 inch AA
 Main Engines Diesel-electric; 800 bhp = 12 knots
 Former U.S. netlayer of the "Aloe" class. Built by American S.B. Co, Cleveland. Laid down in 1940. Launched on 2 July 1941. Completed in 1941. Acquired in 1947. Photograph in the 1955-56 to 1963-64 editions.

AG 1 (ex-*Barbarian*, 21 Oct 1937) P 301AG 2 (ex-*Barbette*, 15 Dec 1937) P 302AG 3 (ex-*Barfair*, 21 May 1938) P 303

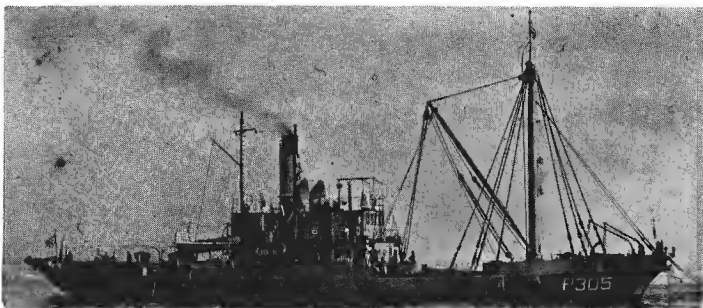
Displacement, tons 750 standard; 1 000 full load
 Dimensions, feet 150 pp; 173.8 oa × 32.2 × 9.5
 Guns 1—3 inch AA
 Main Engines Triple expansion; 850 ihp = 11.5 knots
 Boilers 2 SE

Former British boom defence vessels. First two built by Blyth S.B. Co, third by J Lewis & Sons. Launch dates above. A photograph of AG 1 appears in the 1957-58 edition, and of AG 2 in the 1966-67 edition.

KALDIRAY P 305

Measurement, tons 732 gross
 Main Engines Steam reciprocating; 500 ihp = 10 knots
 Complement 97

Built in 1938. Former French vessel. Purchased in 1964.



KALDIRAY

1967, Turkish Navy, Official

TENDERS

ISIN (ex-*Imia Layteri*) A 570

Displacement, tons 390 full load
 Dimensions, feet 110 × 24 × 7
 Guns 1 MG
 Main Engines Crossley diesel; 330 bhp
 Oil fuel (tons) 32

Built by James Pollock, Sons & Co, Faversham. Launched in 1941. Coester type. Formerly employed in charging the batteries of submarines. Is now a main diving ship. Photograph in the 1957-58 and earlier editions.

Gate Vessels

The gate vessels ex-YNG 45, 46 and 47 were built by U.S. for transfer to Turkey under MAP.

Disposals

The tenders *Akin* and *Dalgic* have been discarded, it is officially stated.

PRESIDENTIAL YACHT

HALAS (ex-*Umur*)

Completed and commissioned for service in 1956. Renamed *Halas* in 1961.

OILERS

ALBAY HAKKI BURAK A 572

Displacement, tons 3 800 full load
 Dimensions, feet 251.3 pp; 274.7 oa × 40.2 × 18
 Main Engines 2 GM diesels; electric drive; 4 400 bhp = 16 knots
 Complement 88

Two new tankers for the Turkish Navy were ordered from Gölcük Dockyard, Izmit. *Alban Burak* was built in 1964.

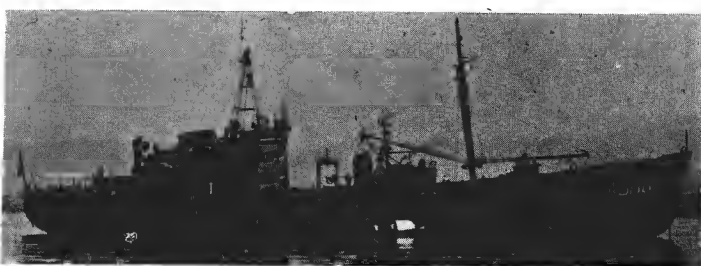


ALBAY HAKKI BURAK

1967, Turkish Navy, Official

YUZBAS I TOLUNAY A 586

Displacement, tons 2 500 standard; 3 500 full load
 Dimensions, feet 260 × 41 × 19.5
 Main Engines Atlas Polar-diesels; 2 shafts; 1 920 bhp = 14 knots
 Built at Taskizak by Haskoy Naval D.Y., Istanbul. Launched on 22 Aug 1950.



YUZBAS I TOLUNAY

1967, Turkish Navy, Official

AKAR (ex-*Istenvul*, ex-*Adour*) A 580

Displacement, tons 4 289 light; 13 200 full load
 Dimensions, feet 433 × 52.7 × 27 feet
 Main Engines Parsons geared turbines; 5 200 shp = 15 knots
 A photograph of *Akar* appears in the 1959-60 to 1966-67 editions.

AKPINAR (ex-*Chiwaukum*) A 574

Displacement, tons 700 light; 2 700 full load
 Measurement, feet 1 453 deadweight
 Dimensions, feet 212.5 wl; 220.5 oa × 37 × 12.8
 Main Engines Diesel; 800 bhp = 10 knots

Formerly the United States oiler *AOG 26*. Built by East Coast S.Y. Inc., Bayonne. Laid down on 2 Apr 1944. Launched on 5 May 1944. Completed on 22 July 1944. Transferred to Turkey in 1949. A photograph appears in the 1957-58 edition.

GOLCUK A 573

Displacement, tons 1 255
 Measurement, feet 750 deadweight
 Dimensions, feet 185 × 31.1 × 10
 Main Engines B. & W. diesel; 700 bhp = 12.5 knots

Built by Gölcük Dockyard, Ismot. Launched on 4 Nov 1935. A photograph appears in the 1957-58 and earlier editions.

The U.S. harbour tugs ex-YTL 155, 751 were transferred under MAP.

THE ROYAL NAVY

Admiralty Board

Secretary of State for Defence (Chairman):

The Right Honourable Denis W. Healey, MBE, MP

Parliamentary Under-Secretary of State for Defence for the Royal Navy:

Mr. Maurice Foley, MP;

Chief of the Naval Staff and First Sea Lord:

Admiral Sir Varyl Cargill Begg, GCB, DSO, DSC

Chief of Naval Personnel and Second Sea Lord:

Vice-Admiral Sir Frank Roddam Twiss, KCB, DSC

Controller of the Navy:

Vice-Admiral Horace Rochfort Law, CB, OBE, DSC

Vice-Chief of the Naval Staff:

Vice-Admiral Sir Peter John Hill-Norton, KCB

Deputy Chief of the Naval Staff:

Vice-Admiral Hugh Richard Benest Janvrin, CB, DSC

Chief of Naval Supplies and Transport and Vice-Controller:

Rear Admiral Arthur Francis Turner, CB, DSC

Chief Scientist (Royal Navy):

Mr. Basil Wilfred Lythall, CB, MA

Second Permanent Under-Secretary of State (Royal Navy):

Sir (Arthur Lucius) Michael Cary, KCB

Commanders-in-Chief

Commander-in-Chief, Western Fleet:

Admiral Sir John Bush, KCB, DSC and 2 Bars

Commander-in-Chief, Portsmouth:

Admiral Sir John Byng Frewen, KCB

Commander-in-Chief, Middle East:

Admiral Sir Michael Le Fanu, KCB, DSC

Commander-in-Chief, Plymouth:

Vice-Admiral Charles Piercy Mills, CB, CBE, DSC

Flag Officers

Commander, Far East Fleet:

Vice-Admiral William Donough O'Brien, CB, DSC

Flag Officer, Naval Air Command:

Vice-Admiral Donald Cameron Ernest Forbes Gibson, CB DSC

Flag Officer, Scotland and Northern Ireland:

Vice-Admiral Sir John Osler Chattock Hayes, KCB, OBE

Flag Officer, Submarines:

Vice-Admiral Michael Patrick Pollock, CB, MVO, DSC

Flag Officer, Aircraft Carriers:

Rear-Admiral Leslie Derek Empson

Flag Officer, Naval Flying Training:

Rear-Admiral David Walter Kirke, CB, CBE

Flag Officer, Middle East:

Rear-Admiral John Edward Ludgate Martin, DSC

Flag Officer, Second-in-Command, Far East Fleet:

Rear-Admiral Edward Beckwith Ashmore, CB, DSC

Flag Officer, Second-in-Command, Western Fleet:

Rear-Admiral Peter Maxwell Compston, CB

Flag Officer, Sea Training and in command Portland Naval Base:

Rear-Admiral John Charles Young Roxburgh, CBE, DSO, DSC and Bar

Flag Officer, Malta:

Rear-Admiral Dudley Leslie Davenport, OBE

Flag Officer, Gibraltar, and Admiral Superintendent, H.M. Dockyard, Gibraltar:

Rear-Admiral Michael Frampton Fell, DSO, DSC and Bar

Flag Officer, Medway, and Admiral Superintendent, H.M. Dockyard, Chatham:

Rear-Admiral Wilfred John Parker, CB, OBE, DSC

Admirals Superintendent

Admiral Superintendent, H.M. Dockyard, Portsmouth:

Rear-Admiral Richard Collings Paige CB,

Admiral Superintendent, H.M. Dockyard, Devonport:

Rear-Admiral Denis Bryan Harvey Wildish, CEng, MIMarE

Admiral Superintendent, H.M. Dockyard, Rosyth:

Rear-Admiral William Terence Colborne Ridley, OBE, CEng, AMIMEchE, MIMarE

General Officers, Royal Marines

Commandant-General, Royal Marines:

General Sir Norman Hastings Tailyour, KCB, DSO and Bar

Chief of Staff to Commandant-General, Royal Marines:

Major-General Nigel Harry Duncan McGill, CB

General Officer Commanding Portsmouth Group, Royal Marines:

Major-General Peter William Cradock Hellings, CB, DSC, MC

General Officer Commanding Plymouth Group, Royal Marines:

Major-General Ferris Nelson Grant, CB

Diplomatic Representation

British Naval Attaché in Washington:

Rear-Admiral Louis Edward Stewart Holland Le Bailly, OBE, CEng,

MIMarE, AMIMEchE, MInstP

American Naval Attaché in London:

Rear-Admiral Louis Joseph Kirn, US Navy

Senior Appointments

Chief Adviser, Personnel and Logistics, Ministry of Defence:

Admiral Sir Desmond Parry Dreyer, GCB, CBE, DSC

Chief Polaris Executive:

Vice-Admiral Sir Hugh Stirling Mackenzie, KCB, DSO and Bar, DSC

Director-General Ships:

Sir Alfred J. Sims, KCB, OBE, CEng, MRINA, RCNC

Director-General Aircraft (Naval):

Rear-Admiral John Bayley Holt, BSc, CEng, MIEE

Director-General Weapons (Naval):

Rear-Admiral Andrew Mackenzie Lewis

Polaris Project Officer:

Rear-Admiral Frederick Dossor, CB, CBE, BSc, CEng, MIEE

MAmerIEE

Director of Naval Construction:

Mr Charles Edgar Sherwin, CEng, MRINA, RCNC

1967-68 New Construction Programme

- 1 Nuclear Powered Fleet Submarine. "Improved" Design. Announced 16 Feb 1967.

1967-68 Conversion Programme

- 1 Aircraft Carrier. *Ark Royal*. 3-year, £30m special refit and modernisation
- 1 Cruiser. *Tiger*. Conversion to operate helicopters.
- 8 Minehunters. "Ton" Class. Conversion from Coastal Minesweepers.
- 1 Ice Patrol Ship. *Endurance* (ex-*Anita Dan*). *Anita Dan*. Conversion from commercial ice operating ship.

1966-67 New Construction Programme

- 1 Aircraft Carrier. CVA 01. Cancelled.
- 2 Nuclear Powered Fleet Submarines. "Valiant" Class. Ordered 9 Aug 1966 and 1 Mar 1967.
- 2 General Purpose Frigates. "Leander" Class. Ordered 8 Mar 1967.

1966-67 Conversion Programme

- 1 Gas Turbine Powered Anti-Submarine Frigate. *Exmouth*. Conversion from steam.
- 3 Minehunters. "Ton" Class. Conversion from Coastal Minesweepers.

1965-66 New Construction Programme

- 1 Guided Missile Armed Destroyer. "Type 82". Ordered 4 Oct 1966.
- 1 Nuclear Powered Fleet Submarine. *Churchill*. Ordered 15 Oct 1965.
- 3 General Purpose Frigates. "Leander" Class.
- 2 Medium Berthing Tugs.
- 2 Landing Craft Mechanised. Mk 9.

1965-66 Conversion Programme

- 1 Cruiser. *Blake*. Conversion to operate helicopters.
- 2 Minehunters. "Ton" Class. Conversion from Coastal Minesweepers.

1964-65 New Construction Programme

- 1 Diesel-Electric Powered Patrol Submarine. *Onyx*.
- 2 Guided Missile Armed Destroyers. "County" Class.
- 3 General Purpose Frigates. "Leander" Class.
- 1 Exercise Minelayer. *Abdiel*. Ordered 28 May 1965.
- 6 Coastal Survey Ships. "Fawn" Class. 2 rescinded.
- 1 Stores Support Ship. "Lyness" Class.
- 1 Replenishment Oiler. "Olynthus" Class.
- 5 Fleet Tenders. "Aberdovey" Class.
- 5 Medium Berthing Tugs.
- 5 Landing Craft Mechanised. Mk 9.

1964-65 Conversion Programme

- 1 Helicopter Support Ship. *Lofoten*. Conversion from Tank Landing Ship.
- 2 Minehunters. "Ton" Class. Conversion from Coastal Minesweepers.
- 3 Degaussing Vessels. "Ham" Class. Conversion from Inshore Minesweepers.

1963-64 New Construction Programme

- 4 Nuclear powered "Polaris" Ballistic Missile Submarines. "Resolution" Class.
- 3 General Purpose Frigates. "Leander" Class.
- 2 Survey Ships. "Hecla" Class.
- 1 Patrol, Survey and Scientific Support Icebreaker. *Terra Nova*. Cancelled 1966.
- 2 Stores Support Ships. "Lyness" Class.
- 1 Fleet Replenishment Ship. "Regent" Class.
- 1 Replenishment Oiler. "Olynthus" Class.
- 6 Fleet Tenders. "Aberdovey" Class.
- 5 Landing Craft Mechanised Mk 9.

1963-64 Conversion Programme

- 1 Minehunter. "Ton" Class. Prototype conversion from Coastal Minesweepers.
- 2 Coastal Survey Vessels. "Ton" Class. Conversion from Coastal Minesweepers.
- 2 Inshore Survey Craft. "Ham" Class. Conversion from Inshore Minesweepers.

Navy Estimates

1959-60: £370,700,000	1964-65: £487,690,000
1960-61: £397,500,010	1965-66: £589,040,000
1961-62: £406,073,400	1966-67: £597,129,000
1962-63: £422,273,000	1967-68: £620,884,000
1963-64: £439,951,600	

Personnel

1959-60: 106,000	1962-63: 100,000	1965-66: 104,000
1960-61: 102,000	1963-64: 100,000	1966-67: 103,000
1961-62: 100,000	1964-65: 103,000	1967-68: 100,500

Mercantile Marine

Lloyd's Register of Shipping: 4,303 vessels of 21,541,740 tons gross

Strength of the Fleet

5 Aircraft Carriers	1 Heavy Repair Ship	7 Fast Patrol Boats
2 Commando Carriers	3 Submarine Parent Ships	7 Seaward Defence Boats
2 Nuclear Powered Polaris Submarines	1 Destroyer Depot Ship	19 Fleet Supply Ships
3 Nuclear Powered Fleet Submarines	6 Maintenance Ships	35 Fleet Oilers
43 Diesel Powered Patrol Submarines	5 Survey Ships	28 Boom Defence Vessels
2 Assault Ships	7 Survey Craft	7 Ocean Salvage Vessels
3 Cruisers	75 Coastal Minesweepers	6 Coastal Salvage Vessels
6 Guided Missile Armed Destroyers	25 Inshore Minesweepers	2 Cable Vessels
16 Destroyers	7 Coastal Minelayers	12 Fleet Tenders
71 Frigates	5 Tank Landing Ships	15 Armament Carriers
1 Minesweeper Support Ship	30 Tank Landing Craft	20 Water Carriers
2 Helicopter Support Ships	60 Minor Landing Craft	80 Fleet and Berthing Tugs
1 Ice Patrol Ship	10 Experimental Vessels	130 Service Craft

British Carrier Borne Aircraft

Name	Maker	Type	Dimensions	Power Plant	Armament	Performance
SEA VIXEN FAW Mks. 1 and 2	Hawker Siddeley	Two-Seat Day and Night All-Weather Fighter	Wing Span 50 ft Folded 22 ft 3 in Length 53 ft 7 in	Two Rolls - Royce Avon 208 Turbojets	Firestreak or Red top, bombs, rockets, Bullpup	Maximum Speed, approx 700 mph
PHANTOM II (F-4K)	McDonnell (USA)	2-Seat All-Weather Interceptor and Attack Fighter	Wing Span 38 ft 5 in Folded 27 ft 6.5 in Length 58 ft 3 in	Two Rolls - Royce Spey 25 R Turbojets with afterburners	Sidewinder and Sparrow AAM's, bombs, rockets	Maximum Speed, over Mach 2
BUCCANEER S. Mks 1 and 2	Hawker Siddeley	Two-Seat All- Weather Strike Aircraft	Wing Span 42 ft 4 in Folded 19 ft 11 in Length 63 ft 5 in	Two Bristol Siddeley Gyron Junior 101 or R-R Spey Turbojets	Nuclear Weapons Bombs, rockets, Bullpup missiles, Martel ASMs and Sidewinder	Speed in tran- sonic range at low altitudes
GANNET AEW. Mk 3	Westland	Three-Seat Early Warning Aircraft	Wing Span 54 ft 4 in Folded 19 ft 11 in Length 44 ft	One Bristol Siddeley Double Mamba 102 Turboprop	None	Maximum Speed, approx 250 mph
WASP HAS Mk 1	Westland	Five-Seat Anti-Submarine Helicopter	Rotor dia: 32 ft 3 in Overall length (blades folded) 30 ft 4 in.	One Bristol Siddeley Nimbus Shaft- turbine	Anti-Submarine homing torpedoes or missiles	Maximum Speed, 120 mph Range, 270 miles
WESSEX HAS Mk 3	Westland	Multi-Seat Anti-Submarine Helicopter	Rotor dia 56 ft	One Rolls - Royce Gazelle 165	Anti-Submarine weapons	
WESSEX HAS Mk 1	Westland	Multi-Seat Anti- Submarine and Transport Helicopter	Rotor dia 56 ft Fuselage Length 48 ft 4.5 in	One Napier Gazelle 161 Shaft - Turbine Engine	Anti-Submarine Weapons SS 11 missiles	Maximum Speed, 132 mph Range, 390 miles
WESSEX HU Mk 5	Westland	Commando assault transport	Rotor dia 56 ft Fuselage Length 48 ft 4.5 in	Two coupled Bristol Siddeley Gnome Shaft-turbines	SS 11 missiles, guns, rockets	Maximum Speed, 132 mph Range, 478 miles

British Naval Guided Missiles

Type	Name	Maker	Length ft	Propulsion	Speed Mach	Range miles	Guidance System	Notes
SURFACE-TO-AIR	Seacat	Short Bros & Harland	4.85	Solid propellant			Radio command	Close range anti-aircraft missile
	Seadart	Hawker Siddeley		BS Odin ramjet, Solid propellant booster				Test firing began 1965
	Seaslug	Hawker Siddeley	19.65	ICI Solid propellant and solid boosters			Beamrider	Carried by County Class destroyers
AIR-TO-AIR	Firestreak	Hawker Siddeley	10.5	Solid propellant	2.0+	0.75—5	Infra-red	Carried by Sea Vixen Mk 1 fighters
	Sparrow	Raytheon	12	Solid propellant	2.2		Semi- active	Carried by Phantom II, F-4K
	Red Top	Hawker Siddeley	11.5	Solid propellant	3.0	7	Infra-red	Carried by Sea Vixen Mk II fighters
	Sidewinder	NOTS (USA)	9.2	Solid propellant	2.5	2	Infra-red	Carried by Phantom II fighters, Buccaneers
AIR-TO-SURFACE	Bullpup	Martin, Maxson (USA) and European consortium	10.5	Liquid propellant	1.8	7	Radio Command	Carried by Phantom II, Buccaneer, Sea Vixen
	Martel	Anglo-French						Carried by Buccaneers
	SS 11	Nord-Aviation (France)	3.9	Solid propellant	335 mph	1.75	Wire guidance	Carried by Wessex helicopters
ANTI-SUBMARINE	Ikara	British Aircraft Corporation		Solid propellant			Carries homing torpedoes	To be mounted in Type 82 guided missile destroyers

LIST OF PENNANT NUMBERS

A few of the ships listed below are on the sales list or have been earmarked for disposal, but their pennant numbers have been retained in this edition for reference and identification until they are actually broken up; and a few ships listed are not yet completed.

The pennant numbers of many submarines were changed on 1 May 1961, several "A" class and "T" class boats in the S09 to S27 range having been renumbered in the S61 to S74 range to enable all the post-war built conventional submarines to be numbered from S01 to S20 and onwards. Nuclear-powered fleet submarines were at the same time renumbered in a new S101 series.

Submarines, Aircraft Carriers, Cruisers, Destroyers, Frigates, Minelayers, Helicopter Support Ships

S Flag Superior:		R Flag Superior:		F Flag Superior		F Flag Superior:	
S 01	Porpoise	R 05	Eagle	F 08	Urania	F 97	Russell
S 02	Rorqual	R 06	Centaur	F 09	Troubridge	F 99	Lincoln
S 03	Narwhal	R 07	Albion	F 10	Aurora	F 101	Yarmouth
S 04	Grampus	R 08	Bulwark	F 14	Leopard	F 102	Zest
S 05	Finwhale	R 09	Ark Royal	F 15	Euryalus	F 103	Lowestoft
S 06	Cachalot	R 12	Hermes	F 18	Galatea	F 104	Dido
S 07	Sealion	R 3B	Victorious	F 19	Terpsichore	F 106	Brighton
S 08	Walrus	C Flag Superior:		F 27	Lynx	F 107	Rothsay
S 09	Oberon	C 20	Tiger	F 28	Cleopatra	F 10B	Londonderry
S 10	Odin	C 34	Lion	F 29	Verulam	F 109	Leander
S 11	Orpheus	C 35	Belfast	F 32	Salisbury	F 113	Falmouth
S 12	Olympus	C 99	Blake	F 34	Puma	F 114	Ajax
S 13	Osiris	D Flag Superior:		F 36	Whitby	F 115	Berwick
S 14	Onslaught	D 01	Caprice	F 37	Jaguar	F 117	Ashanti
S 15	Otter	D 02	Devonshire	F 3B	Arethusa	F 119	Eskimo
S 16	Oracle	D 05	Daring	F 39	Naiad	F 121	Tumult
S 17	Ocelot	D 06	Hampshire	F 40	Sirius	F 122	Gurkha
S 18	Otus	D 07	Caesar	F 41	Volage	F 124	Zulu
S 19	Opossum	D 09	Dunkirk	F 42	Phoebe	F 125	Mohawk
S 20	Opportune	D 10	Cassandra	F 43	Torquay	F 126	Plymouth
S 21	Onyx	D 12	Kent	F 44	Tenacious	F 127	Penelope
S 22	Resolution	D 15	Çavendish	F 45	Minerva	F 129	Rhyl
S 23	Repulse	D 16	London	F 47	Danae	F 131	Nubian
S 26	Renown	D 1B	Antrim	F 48	Dundas	F 133	Tartar
S 27	Revenge	D 19	Glamorgan	F 50	Venus	F 13B	Rapid
S 28	Token	D 20	Fife	F 51	Grafton	F 156	Tuscan
S 32	Tiptoe	D 21	Norfolk	F 52	Juno	F 159	Wakeful
S 33	Trump	D 22	Aisne	F 53	Undaunted	F 185	Relentless
S 34	Taciturn	D 25	Carysfort	F 54	Hardy	F 187	Whirlwind
S 37	Talent	D 31	Broadsword	F 56	Argonaut	F 189	Termagant
S 41	Alaric	D 32	Camperdown	F 57	Andromeda	F 193	Rocket
S 42	Tabard	D 35	Diamond	F 58	Hermione	F 196	Urchin
S 43	Amphion	D 43	Matapan	F 59	Chichester	F 197	Grenville
S 47	Astute	D 44	Lagos	F 60	Jupiter	F 200	Ursa
S 49	Artemis	D 61	Chequers	F 61	Llandeff	F 390	Loch Fada
S 53	Truncheon	D 64	Scorpion	F 62	Pellew	F 429	Loch Fyne
S 55	Thermopylae	D 68	Barrosa	F 63	Scarborough	F 628	Loch Killisport
S 61	Acheron	D 70	Solebay	F 65	Tenby	F 647	Alert
S 63	Andrew	D 73	Cavalier	F 67	Tyrian	N Flag Superior:	
S 64	Anchorite	D 77	Trafalgar	F 72	Wizard	N 11	Minstrel
S 65	Alcide	D 84	Saintes	F 73	Eastbourne	N 12	Gossamer
S 66	Alderney	D 85	Cambrian	F 76	Virago	N 13	Miner III
S 67	Alliance	D 86	Agincourt	F 77	Blackpool	N 16	Miner VI
S 68	Ambush	D 96	Crossbow	F 78	Blackwood	N 17	Miner VII
S 69	Auriga	D 97	Corunna	F 80	Duncan	N 18	Mindful
S 72	Aeneas	D 106	Decoy	F 83	Ulster	N 21	Abdiel
S 96	Artful	D 10B	Dainty	F 84	Exmouth	N 26	Plover
S 101	Dreadnought	D 114	Defender	F 85	Keppel	N 70	Manxman
S 102	Valiant	D 119	Delight	F 88	Malcolm	K Flag Superior:	
S 103	Warspite	D 126	Diana	F 91	Murray	K 07	Lofoten
S 104	Churchill	D 154	Duchess	F 94	Palliser	K 08	Engadine

PENNANT NUMBERS—continued

DGV
Converted to
Degaussing Vessels

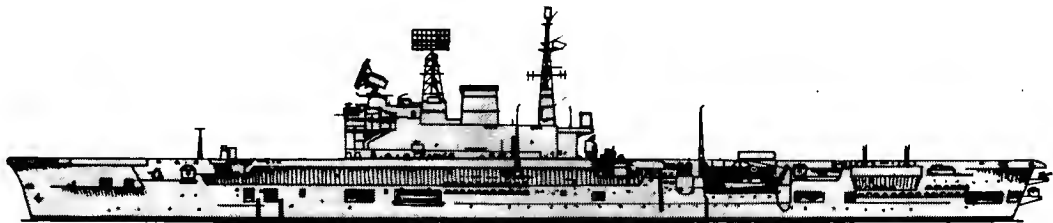
PAS
Employed in the
Port Auxiliary Service

RNXS
Adapted for the
Royal Naval Auxiliary Service

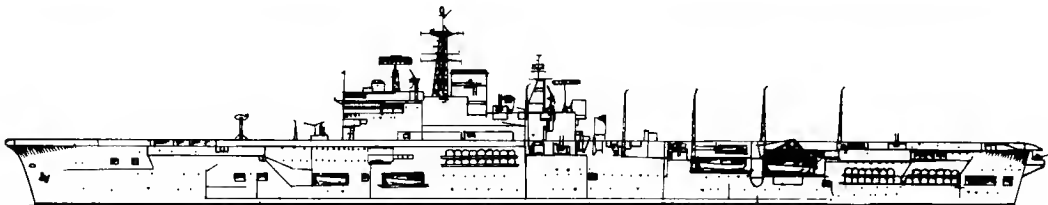
TRV
Converted to
Torpedo Recovery Vessels

Support Ships, Boom Defence Vessels, Landing Ships, Coastal Minesweepers, Inshore Minsweepers

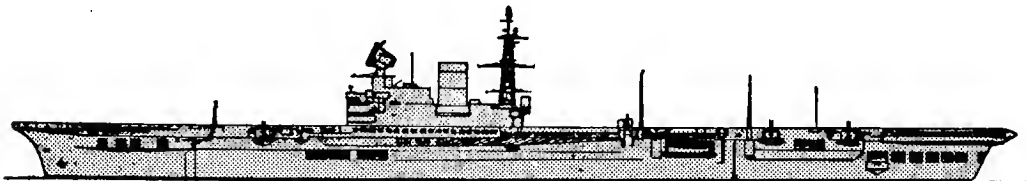
A Flag Superior:		P Flag Superior:		M Flag Superior:		M Flag Superior:	
A	84 Reliant	P	259 Barrington	M	1145 Dufton	M	1216 Crofton
A	108 Triumph	P	261 Bartizan	M	1146 Venturer	M	2001 Dingley
A	133 Hecla	P	282 Barfoam	M	1147 Hubberston	M	2002 Aveley
A	134 Rame Head	P	284 Moorsman	M	1148 Ilmington	M	2003 Brearley
A	137 Hecate	P	294 Barfoil	M	1149 Badminton	M	2004 Brenchley
A	144 Hydra	P	297 Barnestone	M	1150 Invermoriston	M	2005 Brinkley
A	146 Protector	L Flag Superior:		M	1151 Iveston	M	2007 Watchful
A	151 Myrmidon	L	10 Fearless	M	1153 Kedelston	M	2008 Squirrel
A	154 Mermaid	L	11 Intrepid	M	1154 Kellington	M	2009 Chailey
A	158 Duncansby Head	L	369 Meon	M	1155 Monkton	M	2010 Isis
A	160 Fort Dunvegan	L	3003 Anzio	M	1156 Kemerton	M	2603 Arlingham PAS
A	164 Adamant	L	3016 Dieppe	M	1157 Kirkliston	M	2614 Bucklesham TRV
A	185 Maidstone	L	3043 Messina	M	1158 Laleston	M	2616 Chelsham
A	186 Fort Rosalie	L	3044 Narvik	M	1159 Lanton	M	2618 Cobham
A	187 Forth	L	3515 Stalker	M	1160 Letterston	M	2619 Darsham
A	191 Barry Head	L	3516 Striker	M	1161 Leverton	M	2620 Davenham
A	194 Tyne	M Flag Superior:		M	1162 Kildarton	M	2621 Dittisham TRV
A	200 Vidal	M	304 Waterwitch	M	1164 Maddiston	M	2622 Downham TRV
A	225 Mull of Kintyre	M	1101 Coniston	M	1165 Maxton	M	2624 Elsenham TRV
A	229 Fort Duquesne	M	1103 Kilmorey	M	1166 Nurton	M	2626 Everingham PAS
A	230 Fort Langley	M	1104 Alverton	M	1167 Repton	M	2628 Flintham TRV
A	231 Reclaim	M	1105 Clyde	M	1169 Penston	M	2629 Damerham
A	236 Fort Charlotte	M	1106 Appleton	M	1170 Picton	M	2630 Fritham TRV
A	262 Hartland Point	M	1107 Beachampton	M	1173 Mersey	M	2631 Glentham
A	280 Resurgent	M	1108 Bevington	M	1174 Puncheston	M	2635 Haversham TRV
A	303 Dampier	M	1109 Killiecrankie	M	1175 Northumbria	M	2636 Lasham TRV
A	307 Cook	M	1110 Bildeston	M	1176 Rennington	M	2637 Hovingham
A	311 Owen	M	1112 Warsash	M	1177 Roddington	M	2706 Ledsham
A	316 Fort Sandusky	M	1113 Brereton	M	1178 Santon	M	2708 Ludham
A	329 Retainer	M	1114 Brinton	M	1179 Sefton	M	2712 Neasham
A	339 Lyness	M	1115 Bronington	M	1180 Shavington	M	2713 Nettleham
A	334 Stromness	M	1116 Burnaston	M	1181 Sheraton	M	2714 Ockham
A	335 Tarbatness	M	1117 Thames	M	1182 Shoulton	M	2716 Pagham RNXS
A	387 Girdle Ness	M	1118 Calton	M	1186 Tarlton	M	2717 Fordham DGV
A	480 Resource	M	1119 Carhampton	M	1187 Upton	M	2722 Rackham
A	486 Regent	M	1120 Caunton	M	1188 Walkerton	M	2726 Shipham RNXS
P Flag Superior:		M	1122 Chilcompton	M	1189 Wasperton	M	2727 Saxlingham
P	190 Laymoor	M	1123 Clarbeston	M	1192 Wilkieston	M	2728 Shrivenham
P	191 Layburn	M	1124 St. David	M	1193 Wolverton	M	2733 Thakeham RNXS
P	192 Mandarin	M	1125 Cuxton	M	1194 Woolaston	M	2735 Tongham PAS
P	193 Pintail	M	1126 Montrose	M	1195 Wotton	M	2737 Warmington DGV
P	194 Garganey	M	1128 Derriton	M	1196 Yarnton	M	2778 Woldingham PAS
P	195 Goldeneye	M	1129 Oulston	M	1198 Ashton	M	2780 Woodlark
P	200 Barfoss	M	1130 Highburton	M	1199 Belton	M	2781 Portisham RNXS
P	201 Barbain	M	1131 Hickleton	M	1200 Soberton	M	2783 Odiham RNXS
P	202 Barfoot	M	1132 Blaxton	M	1202 Maryton	M	2784 Puttenham RNXS
P	214 Barbecue	M	1133 Bossington	M	1203 Dartington	M	2785 Birdham RNXS
P	216 Barglow	M	1135 Fenton	M	1204 Stubbington	M	2787 Abbotsham
P	232 Barmond	M	1136 Curzon	M	1205 Wiston	M	2788 Georgeham
P	241 Barnard	M	1137 Flockton	M	1206 Fiskerton	M	2790 Thatcham DGV
P	243 Barbican	M	1138 Floriston	M	1208 Lewiston	M	2791 Sandringham
P	244 Barfield	M	1140 Gavington	M	1209 Chawton	M	2792 Polsham
P	254 Barrage	M	1141 Glasserton	M	1211 Houghton	M	2793 Thornham



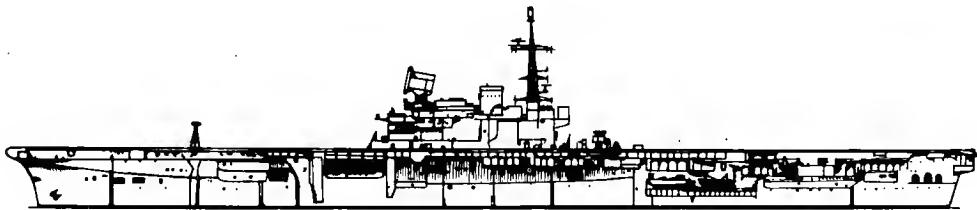
EAGLE



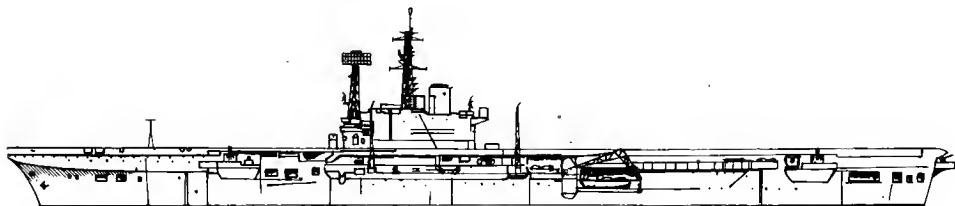
ARK ROYAL



VICTORIOUS

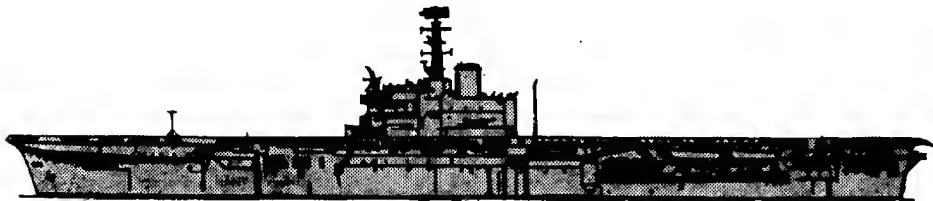


HERMES

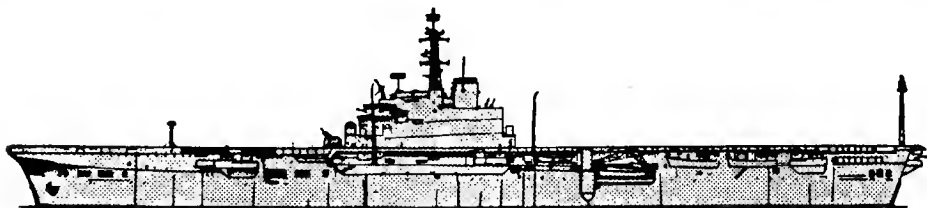


CENTAUR

Commando Carriers

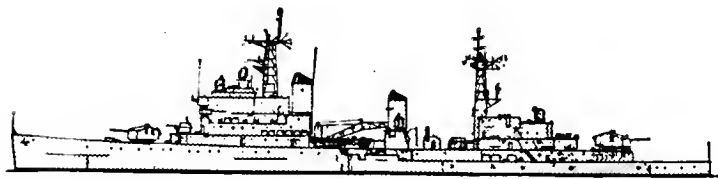


ALBION

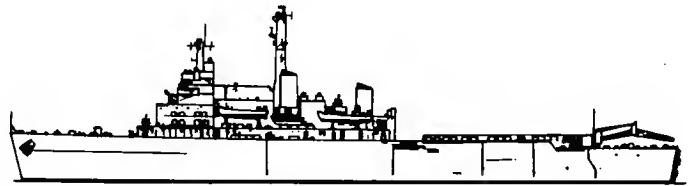


BULWARK

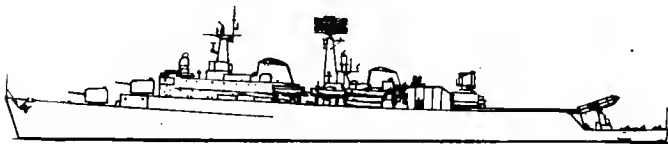
Cruisers, Guided Missile Destroyers, Destroyers, Support Ships



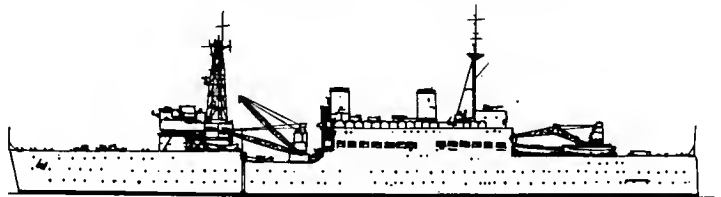
LION, TIGER



FEARLESS, INTREPID (Assault Ships)



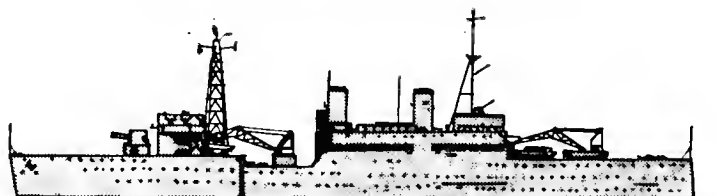
FIFE, GLAMORGAN



FORTH (Nuclear Submarine Support Ship)



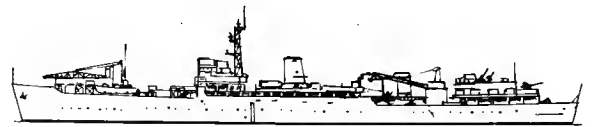
KENT, LONDON



MAIDSTONE (Nuclear Submarine support Ship)



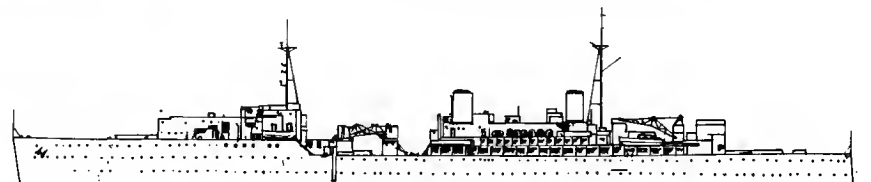
DEVONSHIRE, HAMPSHIRE



HARTLAND POINT (Escort Maintenance Ship)



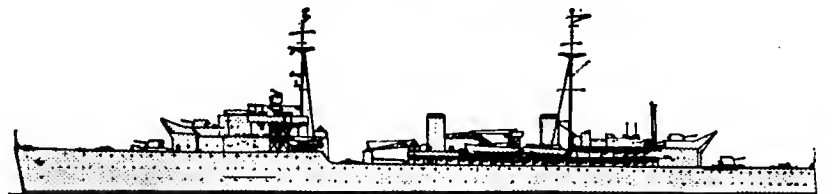
DECOY, DIAMOND, DIANA, DUCHESS



ADAMANT (Submarine Support Ship)



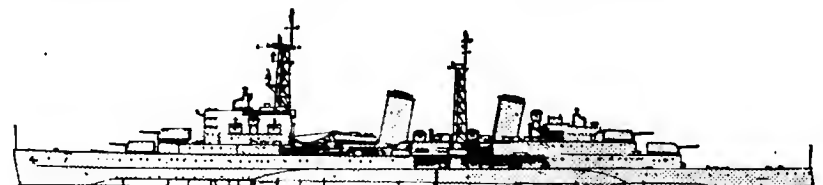
DAINTY, DARING, DEFENDER, DELIGHT



TYNE (Destroyer Depot Ship)



MANXMAN (Minesweeper Support Ship)



BELFAST (ex-Cruiser, Harbour Accommodation Ship)



TRIUMPH (ex-Aircraft Carrier, Heavy Repair and Escort Maintenance Ship)

Radar Pickets, Destroyers, Frigates, Survey Ships, Ice Patrol Ship



AGINCOURT ("BATTLE" Class) Radar Picket



ROTHESAY Class



ULSTER, ZEST



AISNE, BARROSA, CORUNNA ("BATTLE" Class)



PLYMOUTH



GRENVILLE, UNDAUNTED, helideck aft



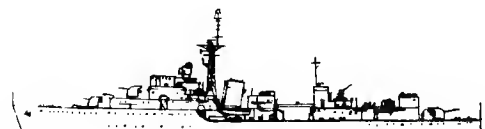
CAPRICE



LEOPARD, LYNX, PUMA



WAKEFUL



CAMBRIAN, CARYSFORT



JAGUAR



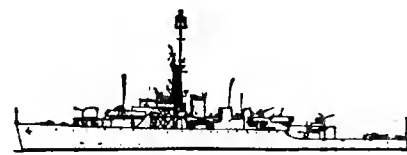
RAPID, RELENTLESS



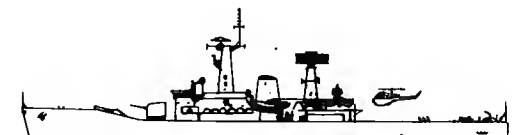
CAVALIER



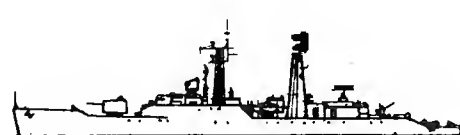
CHICHESTER



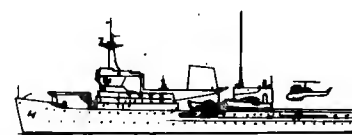
"LOCH" Class



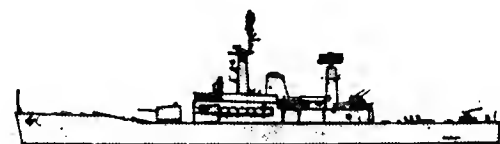
Later LEANDER Class with "Seacat"



SALISBURY



HECATE, HECLA, HYDRA (Survey Ships)



LEANDER Class



LINCOLN



VIDAL (Survey Ship)



"TRIBAL" Class



LLANDAFF



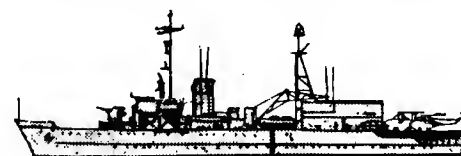
DAMPIER (Survey Ship) Modified Frigate



WHITBY Class



BLACKWOOD Class



PROTECTOR (Ice Patrol Ship) Ex-Netlayer

AIRCRAFT CARRIERS

Name	Deck Letter	No.	Builders	Laid down	Launched	Completed
HERMES (ex-Elephant)	H	R 12	Vickers-Armstrongs, Barrow-in-Furness	21 June 1944	16 Feb 1953	18 Nov 1959

Displacement, tons	23 000 standard; 27 800 full load
Length, feet (metres)	650 (198.1) pp; 744.2 (226.9) oa
Beam, feet (metres)	90 (27.4) hull
Draught, feet (metres)	28 (8.5)
Width, feet (metres)	160 (48.8) overall
Catapults	2 steam
Aircraft	22 plus 8 helicopters
Missiles, AA	2 quadruple launchers for "Seacat"
Boilers	4 Admiralty 3-drum
Main engines	Parsons geared turbines
	78 000 shp; 2 shafts
Speed, knots	28
Complement	1 834 (190 officers, 1 644 men)
	2 100 with air squadrons



HERMES

1967, Official

Originally the name ship of a class including *Albion*, *Bulwark* and *Centaur*, see following pages, but her design was modified to a different type, more advanced and incorporating new equipment and improved arrangements, including five post-war developments—angled deck, steam catapult, landing sight, 3-D radar, and deck-edge lift. Air-conditioned throughout. Manned for trials on 23 Oct 1959, accepted from builders on 18 Nov 1959, commissioned on 25 Nov 1959, embarked air squadrons and joined the Fleet summer 1960. Long refit 1964 to 1966, costing £10 000 000, during which the "Alaskan Highway" was stepped out on the starboard side of the island, adding 15.5 feet to the overall breadth, all ten 40 mm AA guns in five twin mountings were suppressed and two "Seacat" guided weapons systems installed, and living accommodation improved.

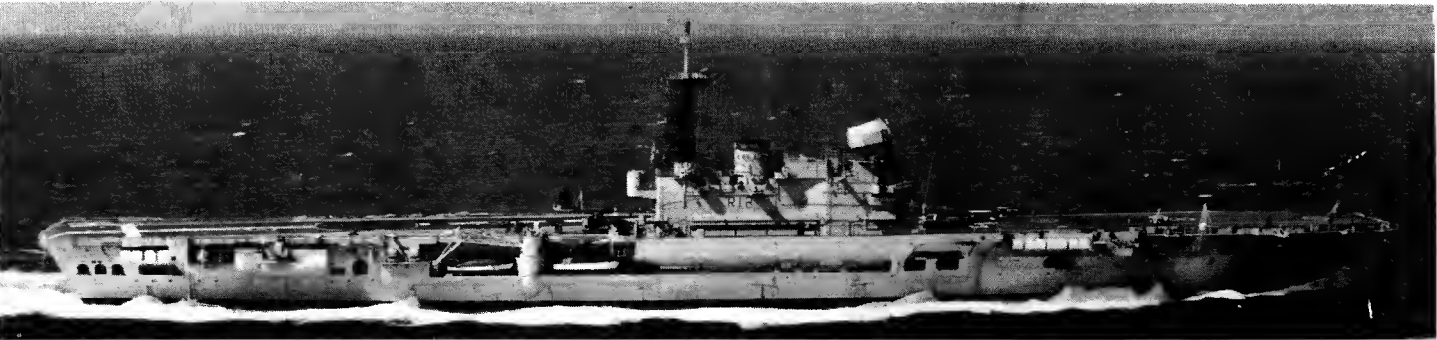
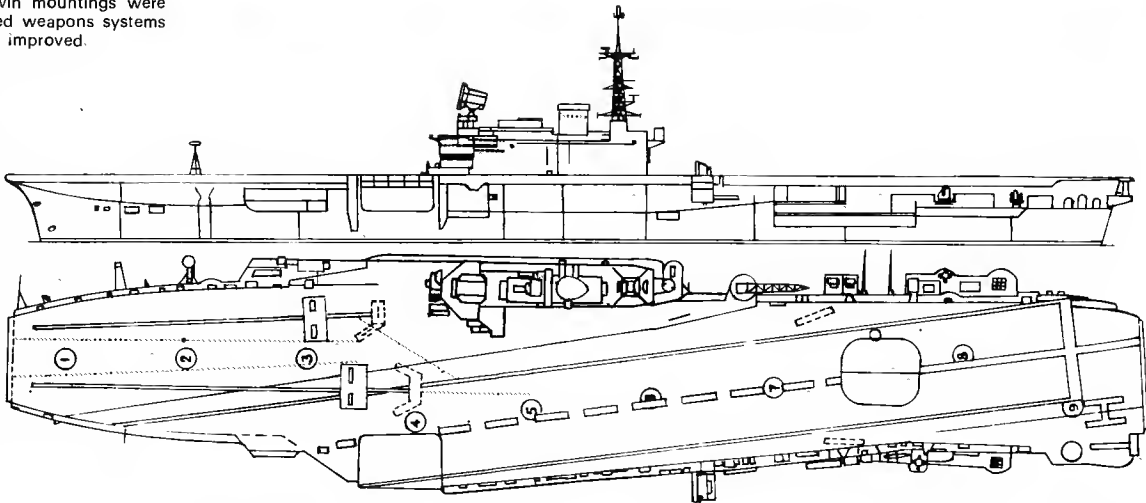
FLIGHT DECK. 6.5 degrees off centre line of ship, the biggest angle that can be contrived in an aircraft carrier of the size.

ENGINEERING. Remote control for engines, coupled with automatic feed for boilers, whereby with entire complement of officers and men under cover and protected in "the citadel", a self-contained section proof against radio-active fall-out, the ship can be steamed through an atomic cloud.

ELECTRICAL. The plant is 440 volt, 3 phase, 60 cycle AC with a generating capacity of 5 440 kW.

PHOTOGRAPHS. A port dead broadside view appears in the 1966-67 editions.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.



HERMES (sponsoned deck added outside island)

1966 Official



HERMES

1967, Official

Aircraft Carriers—continued

Name	Deck Letter	No.	Builders	Laid down	Launched	Completed
ARK ROYAL (ex-Irresistible)	R	R 09	Cammell Laird, Birkenhead	3 May 1943	3 May 1950	25 Feb 1955

Displacement, tons	43 060 standard; 50 390 full load, revised figures
Length, feet (metres)	720 (219.5) pp; 810.2 (246.9) oa
Beam, feet (metres)	112.8 (34.4) hull
Draught, feet (metres)	36 (11.0)
Width, feet (metres)	164.5 (50.2)
Catapults	2 improved steam
Aircraft	40 plus 8 helicopters
Guns, dual purpose	4—4.5 in (115 mm), 2 twin
Guns, AA	18—40 mm, 2 sextuple, 3 twin
Boilers	8 Admiralty 3 drum; pressure 400 psi (28.1 kg/cm ²) superheat 600°F (316°C)
Main engines	Parsons s.r. geared turbines 152 000 shp; 4 shafts
Speed, knots	31.5
Oil fuel (tons)	5 500
Complement	1 632 to 1745
	2 295 to 2 345 with air squadrons



ARK ROYAL

1966, Official

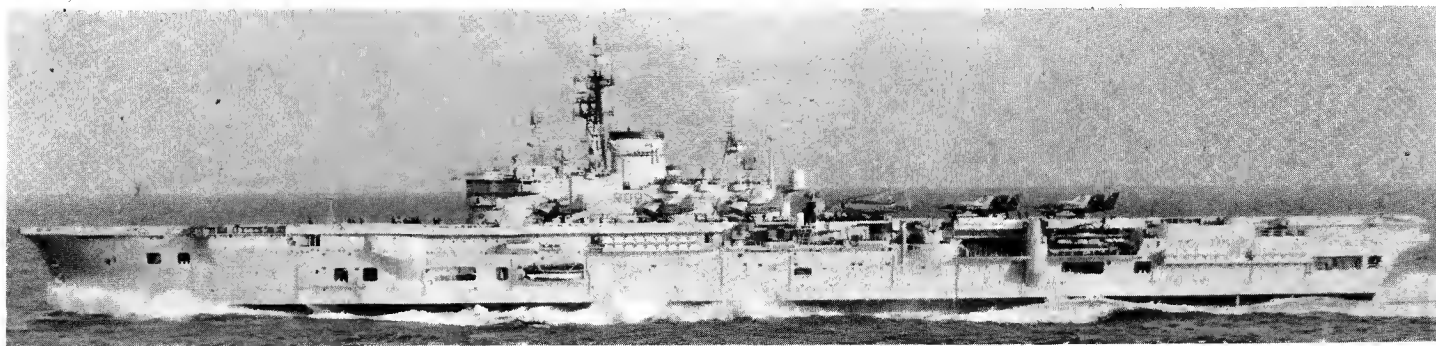
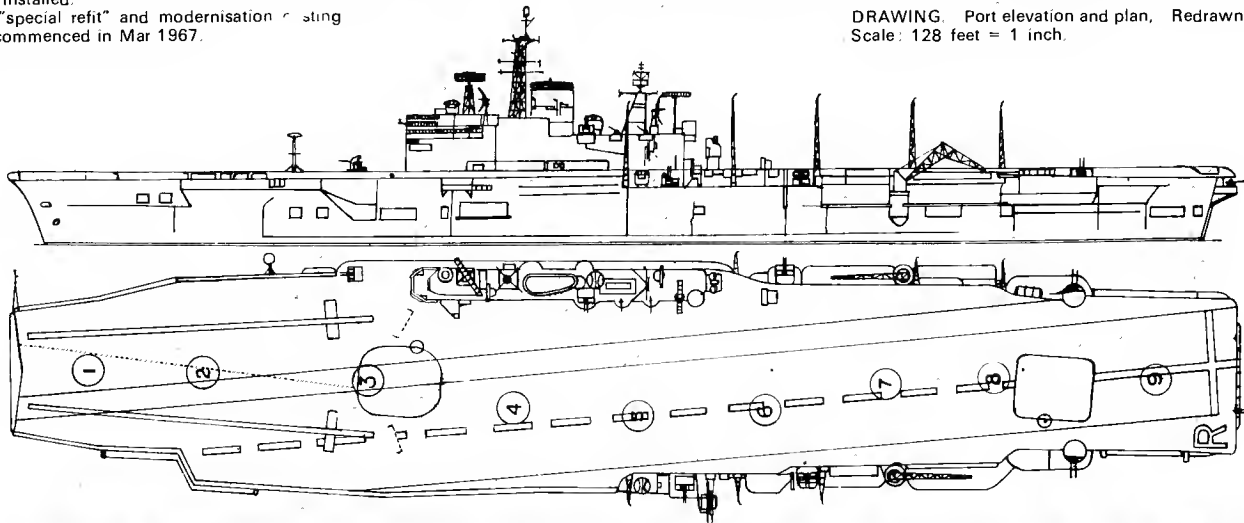
Fitted with 5.5 degrees angled deck, two centre line lifts a more effective deck landing aid, new type of arrestor gear, and improved hangar ventilation. First British aircraft carrier provided with steam catapults and associated installation. Began contractors sea trials on 4 June 1954. First commissioned on 22 Feb 1955. Had first side lift installed in a British aircraft carrier, situated amidships on the port side and serving the upper hangar. Ship originally cost £21 428 000. In 1959 the side lift was removed, the deck park provided by the angled deck having obviated its necessity, and a lattice stump mast for larger radar scanner stepped abaft the bridge. In 1961, the deck landing projector sight, "Hilo" long range guidance system, and more powerful steam catapults were installed. A three years "special refit" and modernisation costing £30 000 000, commenced in Mar 1967.

GUNNERY. Originally mounted 16—4.5 inch in eight twin turrets, two on each beam forward and two on each beam aft, but the four 4.5 inch on the port side forward, were removed in 1956. The 6-barrelled 40 mm mounting before the bridge was also removed. The four 4.5 inch on the starboard side forward and the six single 40 mm

were removed in 1959. The four 4.5 inch in the two forward turrets on the after sponsons were removed in 1964.

PHOTOGRAPHS. Starboard quarter view, port broadside view, and overhead plan view, all before removal of side lift, appear in the 1959-60 and earlier editions.

DRAWING. Port elevation and plan, Redrawn in 1965. Scale: 128 feet = 1 inch.



ARK ROYAL

1967, Official



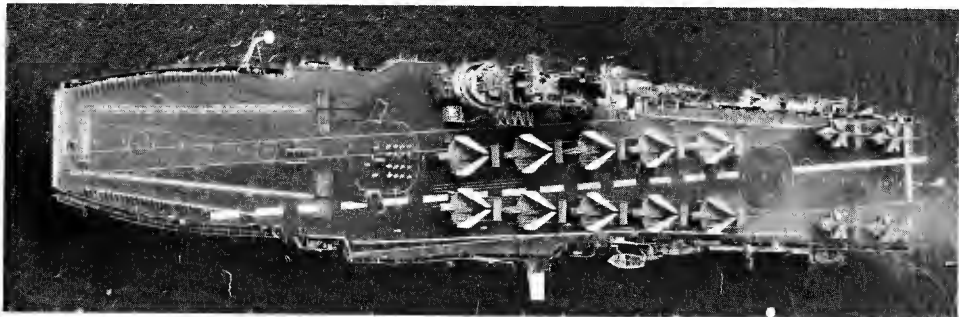
ARK ROYAL

Added 1965, Official

Aircraft Carriers—continued

Name	Deck Letter	No.	Builders	Laid down	Launched	Completed
CENTAUR	C	R 06	Harland & Wolff, Belfast	30 May 1944	22 Apr 1947	1 Sep 1953

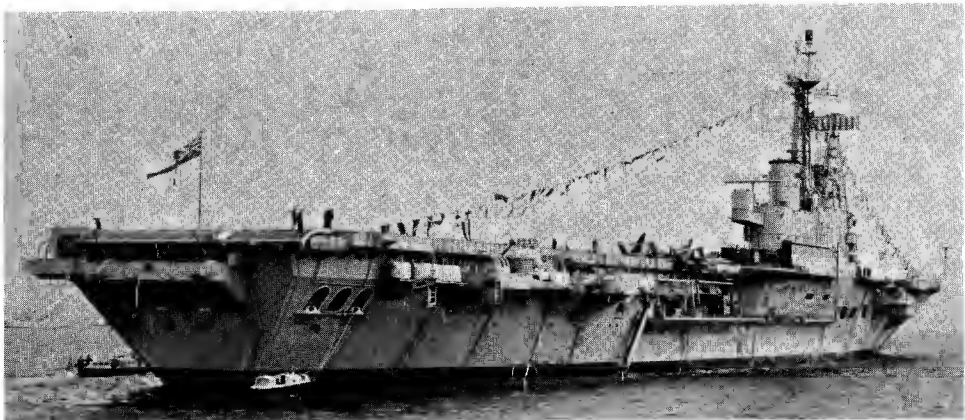
Displacement, tons 22 000 standard; 27 000 full load
Length, feet (metres) 650 (198.1) pp; 737.8 (224.9) oa
Beam, feet (metres) 90 (27.4) hull
Draught, feet (metres) 27 (8.2)
Width, feet (metres) 123 (37.5) overall
Catapults 2 steam
Aircraft 18 plus 8 helicopters
Guns, AA 10—40 mm, 4 twin, 2 single
Boilers 4 Admiralty 3-drum
Main engines Parsons geared turbines
78 000 shp; 2 shafts
Speed, knots 28
Oil fuel (tons) 4 000
Complement 1 028 including ship's air staff
1 330 to 1 390 with air squadrons



CENTAUR (aerial plan view, showing angled deck)

1965, Official

Improvements incorporated during construction increased the originally designed displacement from 18 300 tons standard. An enlarged version of the "Majestic" design with propelling machinery of nearly twice the power to give an extra five knots speed (29.5 knots on trials) and bringing it more into line with modern fleet aircraft requirements. Cost £10 434 000 excluding guns, aircraft and equipment. An "interim" (5.5 degrees) angled deck was installed which necessitated the removal of three twin 40 mm mounts and the extension of flight deck on the port side amidships. Five arrestor wires spaced equally along the angled deck. Equipped with steam catapults and new arrestor gear in 1957. Completed an extensive refit in Mar 1961, a small sponson being fitted on the port side right aft. Refitted in 1963 with a Type 965 single "bedstead" aerial on a small lattice tower in place of the light tripod mast at the forward end of the island. The 6-barrelled 40 mm AA gun abaft the island, a twin 40 mm mounting, and two single 40 mm guns were removed.



CENTAUR

Added 1967, courtesy Dr Giorgio Arra

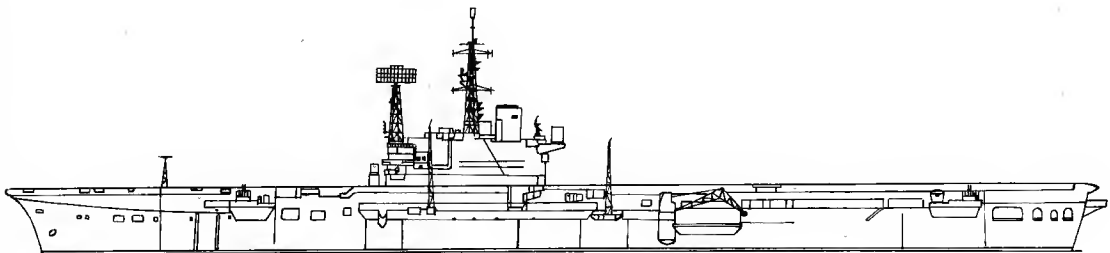
CLASS. Of two sister ships, *Bulwark* was converted into a commando carrier in 1959-60, and *Albion* was similarly converted in 1961-62, see later page. Of the other five ships of this class originally ordered, *Arrogant*, original *Hermes*, *Monmouth* and *Polyphemus* were cancelled in 1945; and *Hermes* (ex-*Elephant*) was completed to a modified design (see previous page).

DRAWING. Port elevation and plan. Redrawn in 1967. Scale: 128 feet = 1 inch.

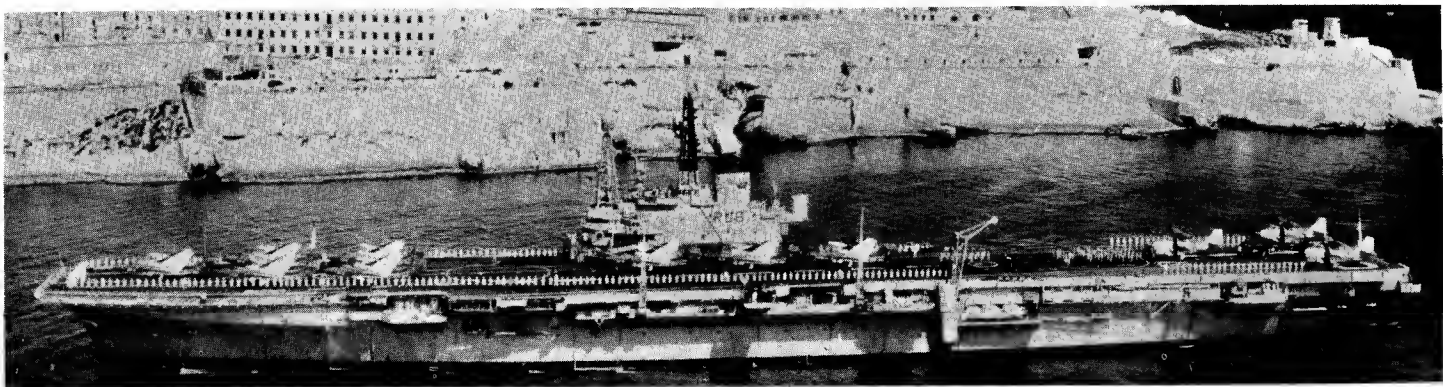
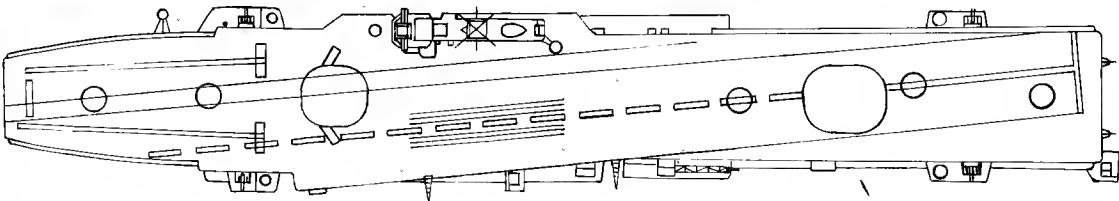
PHOTOGRAPHS. A starboard quarter oblique aerial view appears in the 1957-58 to 1959-60 editions, a starboard broadside view in the 1958-59 to 1961-62

editions, a port bow oblique aerial view in the 1960-61 to 1963-64 editions, a dead overhead view in the 1961-62 to 1964-65 editions, a port oblique aerial view showing forward lift-well open in the 1962-63 to 1965-66 editions, and a starboard bow oblique aerial view at speed in the 1964-65 to 1966-67 editions.

DISPOSALS OF "MAJESTIC" CLASS
Magnificent (lent to Canada from 1946 to 1957) was scrapped in 1965. *Powerful* (renamed *Bonaventure*) was completed for Canada; *Majestic* (renamed *Melbourne*) was completed for Australia; and *Terrible* (renamed *Sydney*) was sold to Australia. *Hercules* was sold to India in 1957 for completion and modernisation and commissioned and renamed *Vikrant* in Mar 1961. *Leviathan* (suspended in 1946 and never completed) was awaiting disposal in 1967.



DISPOSALS OF "COLOSSUS" CLASS
Venerable (renamed *Karel Doorman*) was sold to Netherlands in 1948. *Colossus* (renamed *Arromanches*) was sold to France in 1951; two were completed as maintenance aircraft carriers—*Perseus* (scrapped in 1958) and *Pioneer* (scrapped in 1954). *Vengeance* was sold to Brazil in 1956 and after being modernised was commissioned under new name *Minas Gerais* in Dec 1960. *Warrior* was sold to Argentina in July 1958 and was commissioned under new name *Independencia* in Jan 1959. *Glory* was scrapped in 1961 and *Ocean* and *Theseus* in 1962.



CENTAUR

Added 1966, Official

Aircraft Carriers—continued

Name	Deck Letter	No.	Builders	Laid down	Launched	Completed	Reconstructed
EAGLE (ex-Audacious)	E	R 05	Harland & Wolff, Belfast	24 Oct 1942	19 Mar 1946	1 Oct 1951	HM Dockyard Devonport, 1959-64

Displacement, tons	43 000 standard; 50 000 full load, revised figures
Length, feet (metres)	720 (219.5) pp; 811.8 (247.4) oa
Beam, feet (metres)	112.8 (34.4) hull
Draught, feet (metres)	36 (11.0)
Width, feet (metres)	171 (52.1) overall
Catapults	2 steam (see <i>Reconstruction</i> note)
Aircraft	34 plus 10 helicopters
Missiles, AA	6 quadruple launchers for "Seacat" (3 starboard, 2 port, 1 aft)
Guns, dual purpose	8—4.5 in (115 mm), (2 twin starboard, 2 twin port)
Boilers	8 Admiralty 3-drum
Main engines	Parsons s.r. geared turbines
Speed, knots	31.5
Complement	1 745 including ship's air staff; 2 750 max with air squadrons

Ordered on 19 May 1942. Accepted into the Royal Navy on 1 Mar 1952. Of 90 per cent welded construction. Damage control arrangements are exceptionally complete. Originally cost £15 795 000. Modernisation cost £31 000 000.

RECONSTRUCTION. Fully angled flight deck at 8.5 degrees, new flight deck armour, and Type 984 radar. Two steam (instead of hydraulic) catapults for launching the latest naval aircraft. Superstructure half as long again as former island, and lattice mast shorter and thicker than previously stepped. The most up-to-date living accommodation was also incorporated. Reconstruction commenced at the end of 1959, and was completed in 1964. Commissioned on 14 May 1964.

REFIT. During the refit at HM Dockyard, Devonport, from Sep 1966 to Apr 1967, more powerful catapults and arrester gear were installed to receive the new Phantom aircraft. Recommissioned 6 Apr 1967.

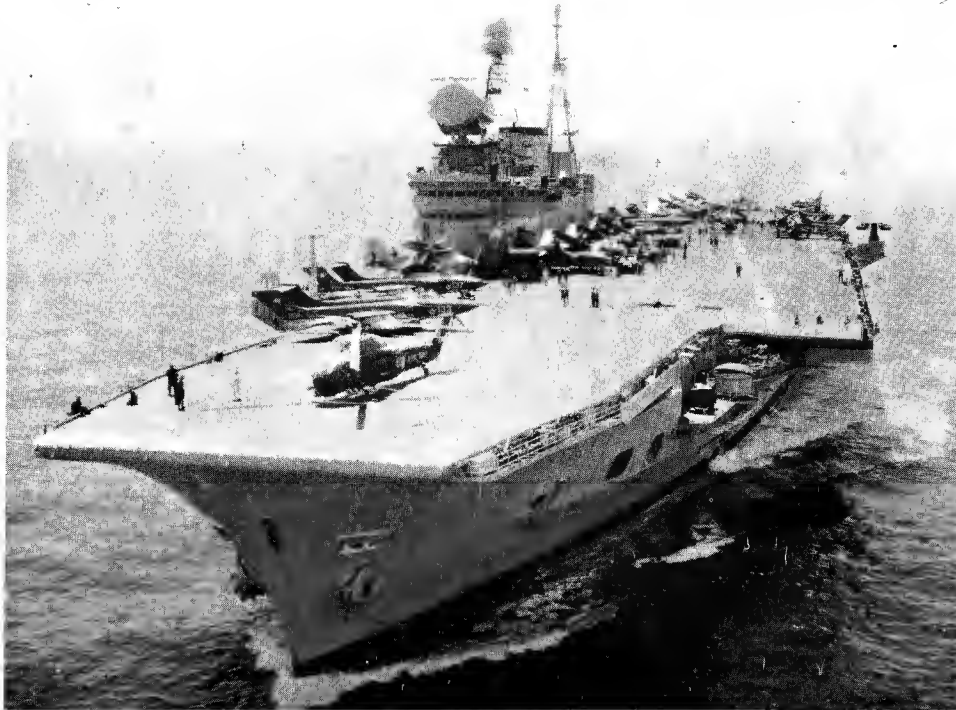
ANTI-CONTAMINATION. Equipped with an improved and built-in pre-wetting system to counteract contamination in the event of fallout or chemical hazard.

ELECTRICAL. During reconstruction the generating capacity of the ship was increased to 8 250 kW.

CLASS. Sister ship of *Ark Royal*, see previous page. Two more large aircraft carriers of this type, *Africa* and original *Eagle* were cancelled at the end of the Second World War. Three much larger aircraft carriers, to have been named *Gibraltar*, *Malta* and *New Zealand*, were also cancelled.

PHOTOGRAPHS. A port bow oblique aerial view and an overhead plan view appear in the 1964-65 to 1966-67 editions, and a starboard broadside surface view in the 1966-67 edition.

DRAWING. Port elevation and plan after reconstruction. Drawn in 1964. Scale: 128 feet = 1 inch.



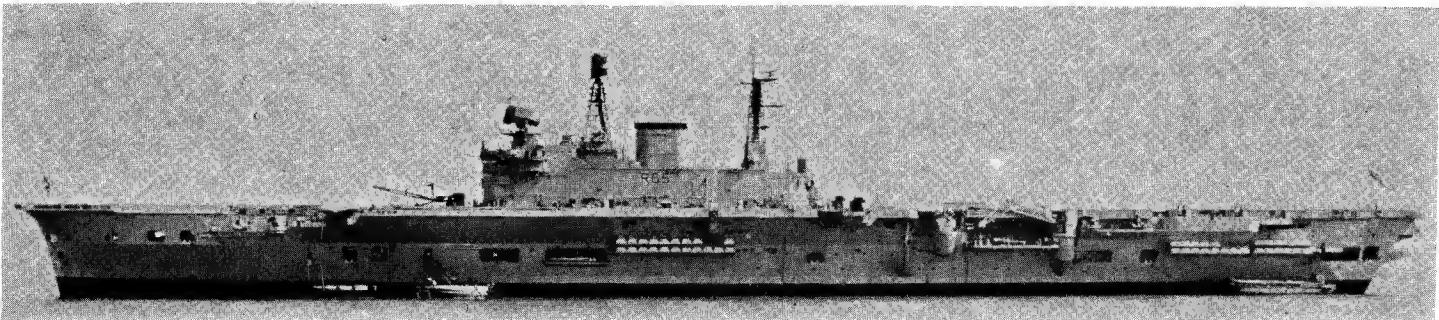
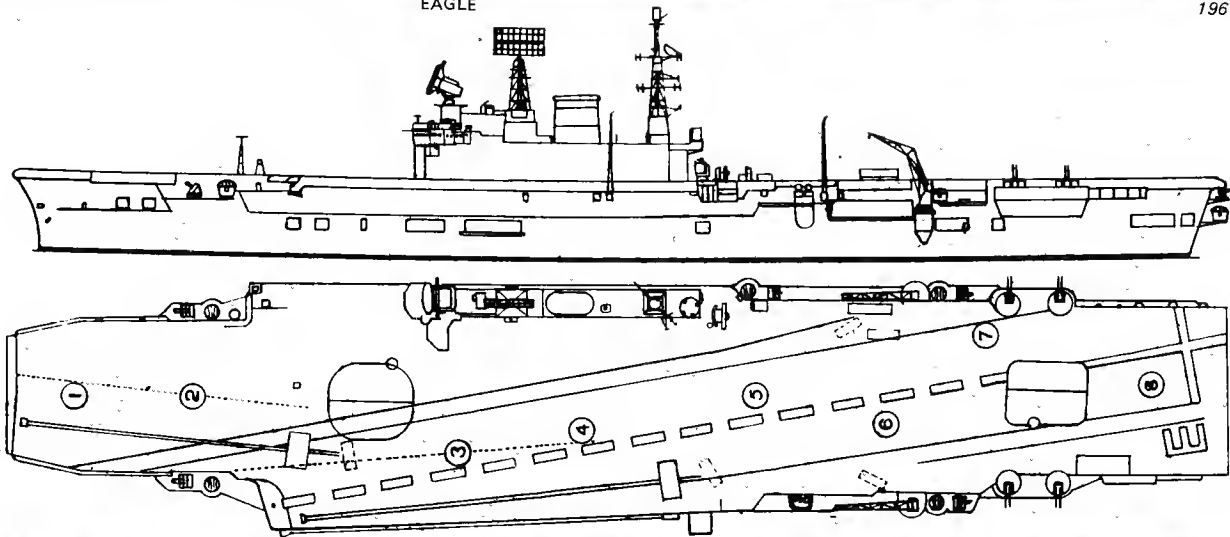
EAGLE

1967, Official



EAGLE

1967, Official



EAGLE

1967, Official

Aircraft Carriers—continued

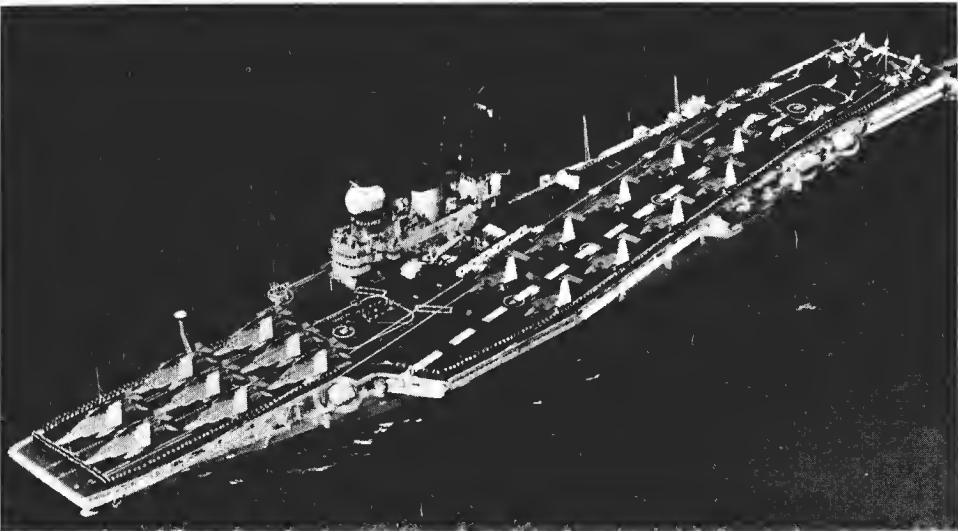
Name	Deck Letter	No.	Builders	Laid down	Launched	Completed	Rebuilt
VICTORIOUS	V	R 38	Vickers-Armstrongs, Newcastle-on-Tyne	4 May 1937	14 Sep 1939	15 May 1941	HM Dockyard Portsmouth, 1950-60

Displacement, tons	30 530 standard; 35 500 full load
Length, feet (metres)	673 (205·7) pp; 710 (216·4) wl; 781 (238·7) oa
Beam, feet (metres)	103·5 (31·6) hull
Draught, feet (metres)	31 (9·4)
Width, feet (metres)	157 (47·9) overall
Catapults	2 steam
Aircraft	23 plus 8 helicopters
Guns, AA	8—3 in (76 mm) 50 cal. (2 twin forward, 2 twin aft)
Armour	Belt 4½ in (114 mm); flight deck 3½ in (89 mm); hangar side 4½ in Hangar deck 2½ in (64 mm)
Boilers	6 Foster Wheeler
Main engines	3 Parsons geared turbines 111 000 shp; 3 shafts
Speed, knots	31; trials speed 32·2
Complement	2 400

Ordered on 13 Jan 1937. This ship originally had a displacement of 22 600 tons standard and 29 100 tons full load, dimensions of 751 × 95·8 × 29·2 feet, and a main armament of 16—4·5 inch guns.

RECONSTRUCTION. Rebuilt in HM Dockyard, Portsmouth, July 1950 to Jan 1958. Re-launched (floated out of dock) on 19 May 1955. She has a fully angled flight deck and modern landing control system. Her electronic equipment is of advanced design. It includes a high powered Type 984 radar set to detect aircraft targets at considerable range and height. With this goes a new display system to clarify the airborne target situation quickly and easily, enabling her to exploit the capabilities of the latest naval aircraft. Two mirror sight deck landing aids and higher speed lifts were fitted. Her reconstruction increased overall length by 30 feet, breadth by 55 feet, hull beam by 7·7 feet and draught by 1·8 feet. Her 3 inch guns were of new pattern. She was the first aircraft carrier in the Royal Navy with a fully angled deck. Her modernisation included re-boiling, new armament and improved accommodation.

REFIT. Refitted in HM Dockyard, Portsmouth 1 May 1962 to 9 Aug 1963, when four 3-inch AA and six 40 mm AA guns were removed, flight deck strengthened, flying control position enlarged, access deck added outside island, projector sights substituted, catapults and communications improved and air-conditioning extended. The refit, Aug 1965 to Apr 1966, at Portsmouth, costing £2 500 000, mainly consisted of improving living accommodation and communications system.



VICTORIOUS (after 1965-66 refit)

1966, Official

FLIGHT DECK. An angle of 8·75 degrees was contrived by extending the flight deck outwards for 41 feet on the port side for a length of 120 feet. It overhangs the ship's side by 35·5 feet, the extension being supported by a very large sponson bracketed into the ship's structure, and counterbalanced by the weight of the island superstructure on the starboard side. The flight deck, over 775 feet long, is strong enough to take the heaviest Fleet Air Arm machines, including the Blackburn Buccaneer. Two parallel track 145 feet catapults are fitted forward with aircraft positioners and jet blast deflectors. The arrester comprises four wires with an average span of 80 feet.

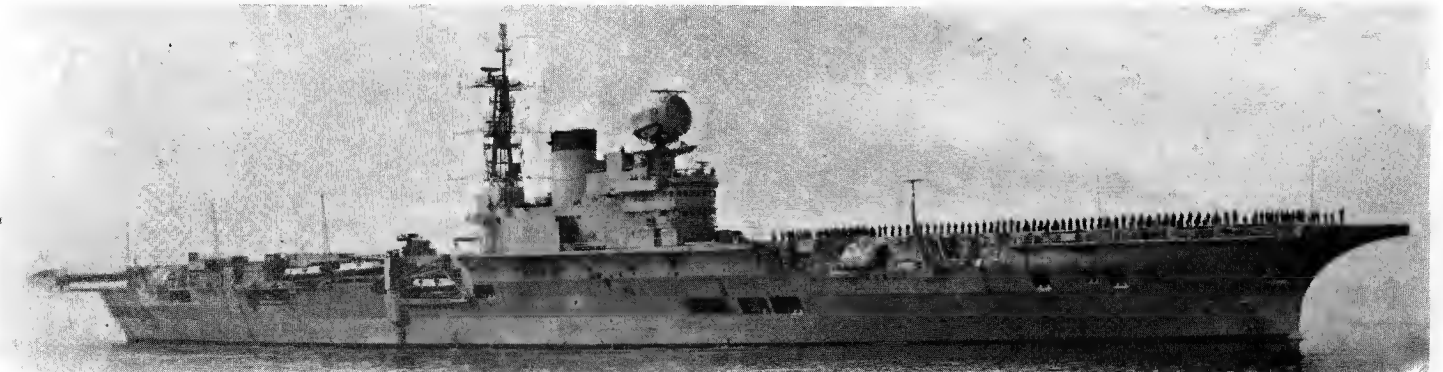
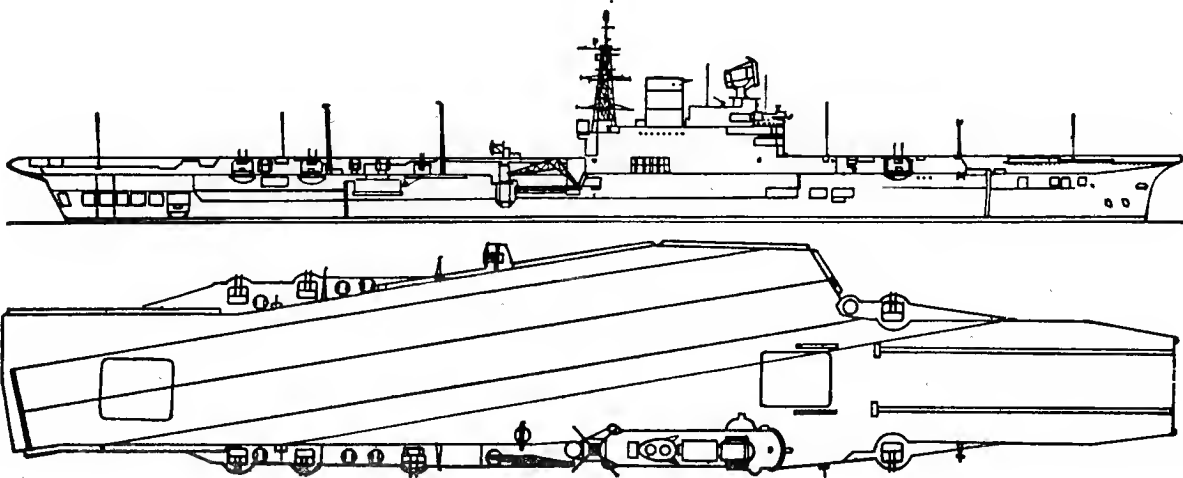
ELECTRICAL. The generating capacity of the ship when modernised was increased from 2 400 kW to 4 200 kW, since increased to 5 000 kW. There are eight turbo-generators and four diesel generators.

DRAWING. Starboard elevation and plan. Scale: 128 feet = 1 inch.

APPEARANCE. Easily distinguished from other carriers by smaller island, very large radar aerial surmounting the bridge, long overhang at the stern, massive angled deck terminal sponson and black band round top of funnel.

ENGINEERING. The ship can be steamed from the machinery control room by hydraulic remote controls. Steam conditions: 440 psi pressure; 750°F superheat. Propellers: 15·5 ft diameter, 230 rpm, 4-bladed on wing shafts, 5-bladed on centre shaft.

PHOTOGRAPHS. A port surface view and a port bow oblique aerial view appear in the 1960-61 and 1961-62 editions; a port bow surface view and a starboard bow oblique aerial view in the 1959-60 edition; a starboard quarter surface view, a port quarter aerial view, and a starboard broadside aerial view in the 1962-63 and 1963-64 editions, a dead overhead aerial plan and view, showing the fully angled deck, in the 1959-60 to 1963-64 editions; a port bow oblique aerial view in the 1962-63 to 1965-66 editions, and a port bow surface view at speed in the 1964-65 to 1966-67 editions.



VICTORIOUS

1967, Wright & Logan

COMMANDO CARRIERS

Name	Deck Letter	No.	Builders	Laid down	Launched	Completed	Converted
ALBION	A-	R 07	Swan, Hunter & Wigham Richardsom	23 Mar 1944	6 May 1947	26 May 1954	1961-62
BULWARK	B	R 08	Harland & Wolff Ltd, Belfast	10 May 1945	22 June 1948	4 Nov 1954	1959-60

2 Modified "Centaur" Class

Displacement, tons	23 300 standard; 27 300 full load
Length, feet (metres)	650 (198.1) pp; 737.8 (224.9) oa
Beam, feet (metres)	90 (27.4) hull
Draught, feet (metres)	28 (8.5)
Width, feet (metres)	123.5 (37.7) overall
Aircraft	16 helicopters
Landing craft	4 LCVP
Guns, AA	8—40 mm; 4 twin
Boilers	4 Admiralty 3 drum
Main engines	Parsons geared turbines
	78 000 shp; 2 shafts
Speed, knots	28
Complement	1 035 plus 733 Royal Marine Commando and troops (900 in <i>Bulwark</i>); Accommodation for 1 923 to 1 937 officers and men

Former sister ships of *Centaur*, see previous page. Originally cost £9 836 000 and £10 386 000, respectively, excluding guns, aircraft and equipment. Converted into commando carriers at Portsmouth Dockyard, Feb 1961 to 1 Aug 1962 (*Albion*) and 1959 to 19 Jan 1960 (*Bulwark*). A full strength commando is available, which the ships can quickly transport and land with equipment. Their helicopters are also able to disembark the commando's vehicles. The ships have sufficient stores and fuel to support the commandos in operations ashore, and can re-embark the unit speedily. They not only reinforce the traditionally close association of the Corps of Royal Marines with the Royal Navy, but give these versatile troops greater mobility and usefulness, and enable them to be fully self-supporting. The ships are fully convertible to the anti-submarine role. They are able, at short notice, and entirely within their own resources to adapt their helicopters for anti-submarine work. *Bulwark* was the first ship of her kind in the Royal Navy.

GUNNERY. Eight 40 mm AA guns were removed during the initial conversion of *Bulwark* to provide space for four vehicle personnel landing craft carried at built-in gantries, leaving her with 18—40 mm AA guns. As converted *Albion* has one twin 40 mm mounting in each quadrant; and *Bulwark* has since also been reduced to this armament.

ENGINEERING. The three-bladed propeller in *Bulwark* was replaced by a four-bladed propeller. At 28 knots the propellers work at 230 revolutions per minute. *Albion* was engined by Walsend Slipway & Engineering Co Ltd, Tyne, and *Bulwark* by her builders.

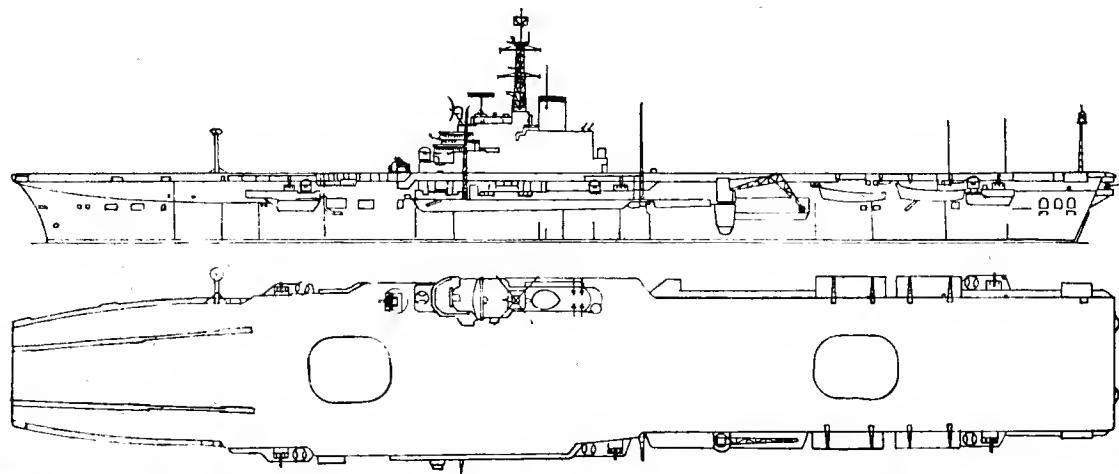


ALBION

1967, Official

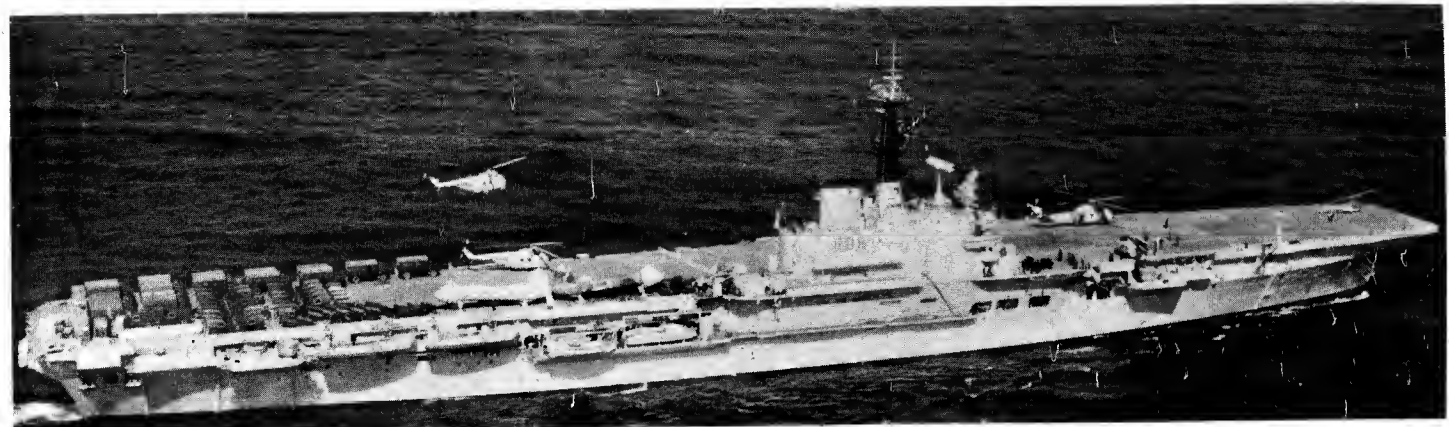
CONVERSION. Basically *Bulwark* was not changed during her initial conversion, although the fixed wing capability, arrester wires and catapults were removed. Alterations and modifications were made to render the ship suitable as an all-helicopter troop carrier with 16 Westland Whirlwind aircraft, replaced at a later date by the Wessex, and four landing craft (vehicle or personnel). The ship was fitted with the most extensive air condition-

ing system in the Royal Navy. In 1963 *Bulwark* was further refitted to the same standard as *Albion*, with slight variation in air conditioning. In her initial conversion *Albion* embodied a number of improvements and was able to carry Wessex helicopters and a larger military force. Her extensive modifications included alteration to the angled flight deck and the removal of catapult and arrester gear.



PHOTOGRAPHS. A port broadside aerial view, and a dead overhead plan view of *Bulwark* appear in the 1960-61 edition, a starboard surface view in the 1961-62 editions, an aerial plan view in the 1961-62 edition, a port broadside aerial view with Whirlwind helicopters flying above in the 1961-62 to 1963-64 editions, a starboard broadside aerial view with helicopter formation in the 1962-63 and 1963-64 editions, a port broadside view of *Albion* in the 1962-63 edition (Addenda), a starboard quarter surface view in the 1962-63 and 1963-64 editions, a port broadside surface view of *Bulwark* in the 1964-65 and 1965-66 editions, and a port bow oblique overhead view of *Albion* showing helicopters ranged on deck in the 1964-65 to 1966-67 editions.

DRAWING. Port elevation and plan of *Bulwark*. Scale: 128 feet = 1 inch.



BULWARK

1966, Official

SUBMARINES

Name	No.	Builders	Laid down	Launched	Scheduled Completion
RENOWN	S 26	Cammell Laird & Co Ltd, Birkenhead	25 June 1964	25 Feb 1967	July 1968
REPULSE	S 23	Vickers-Armstrongs Ltd, Barrow-in-Furness	12 Mar 1965		July 1969
RESOLUTION	S 22	Vickers-Armstrongs Ltd, Barrow-in-Furness	26 Feb 1964	15 Sep 1966	July 1968
REVENGE	S 27	Cammell Laird & Co Ltd, Birkenhead	19 May 1965		July 1969

Nuclear Powered Ballistic Missile
Submarines (SSBN)
4 "Resolution" Class

Displacement, tons	over 7 500 (official figure)
Length, feet (metres)	360 (109.7) pp; 425 (129.5) oa
Beam, feet (metres)	33 (10.1)
Draught, feet (metres)	30 (9.1)
Missiles, surface	16 tubes amidships for "Polaris" A-3 ICBM's, range 2 500 nautical miles
Torpedo tubes	6-21 in (533 mm) forward
Nuclear reactors	1 pressurised water cooled
Main engines	Geared steam turbines; 1 shaft
Speed, knots	20 on surface; 25 submerged
Complement	141 (13 officers, 128 ratings); 2 crews (see Personnel)

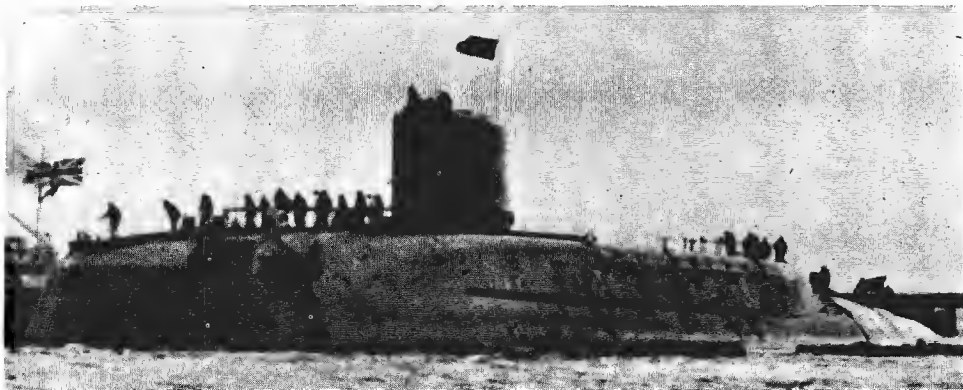
Britain's first polaris armed submarine, *Resolution* put to sea on 22 June 1967 and completed 6 weeks trials in the Firth of Clyde and Atlantic Ocean on 17 Aug 1967. She was handed over to the Royal Navy in October.

PROJECT. In Feb 1963 it was officially stated that it was intended to order four or five 7 000 ton nuclear powered submarines, each to carry 16 "Polaris" missiles, and it was planned that the first would be on patrol in 1968. Their hulls and machinery would be of British design. As well as building two submarines Vickers-Armstrongs would give lead yard service (ie act as the "parent" firm) to the builder of the other two. Four Polaris submarines were in fact ordered on 8 May 1963 (date of official announcement). The intention to build a fifth Polaris submarine was confirmed by the then Ministry of Defence on 26 Feb 1964, but this intention was rescinded by a new Ministry of Defence on 15 Feb 1965.

DESIGN. The submarines, the largest ever built for the Royal Navy, differ in several respects from United States Polaris submarines, notably in having six torpedo tubes instead of four, and modified habitability.

PERSONNEL. Each submarine, which has accommodation for 19 officers and 135 ratings, will be manned on a two-crew basis, in order to get maximum operational time at sea on the pattern of the system in the United States Polaris submarines in which two complete crews relieve each other approximately every three months.

COST. Originally officially estimated to be £15 000 000 each, excluding missiles, and £70 000 000 each total.



RESOLUTION (after launching)

1966, Official



RENOWN (being launched)

1967, Official



RENOWN (after launching)

1967, Official



RESOLUTION (on trials)

1967, Official

Submarines—continued

Name	No.	Builders	Ordered	Laid down	Launched	Completed (Commissioned)
CHURCHILL	S 104	Vickers Ltd Shipbuilding Group, Barrow	21 Oct 1965			
VALIANT	S 102	Vickers Ltd Shipbuilding Group, Barrow	31 Aug 1960	22 Jan 1962	3 Dec 1963	18 July 1966
WARSPITE	S 103	Vickers Ltd Shipbuilding Group, Barrow	12 Dec 1962	10 Dec 1963	25 Sep 1965	18 Apr 1967
	S 105	Cammell Laird & Co Ltd, Birkenhead	9 Aug 1966			
	S 106	Vickers Ltd Shipbuilding Group, Barrow	1 Mar 1967			
	S 107	Cammell Laird & Co Ltd, Birkenhead				

NUCLEAR POWERED SUBMARINES

5 "Valiant" Class + 1 "Improved"

Displacement, tons	3 500 standard, 4 500 submerged
Length, feet (metres)	285 (86.9)
Beam, feet (metres)	33.2 (10.1)
Draught, feet (metres)	27 (8.2)
Torpedo tubes	6—21 in (533 mm) homing
Nuclear reactors	Pressurised water-cooled, British prototype
Main engines	EE Geared steam turbines; 1 shaft
Speed, knots	30 approx
Complement	103 (13 officers, 90 men)

It was announced on 31 Aug 1960 that the contract for a second nuclear powered submarine (*Valiant*) had been awarded to Vickers-Armstrongs (Shipbuilders Ltd), the principal sub-contractors being Vickers-Armstrongs (Engineers) Ltd, for the machinery and its installation, and Rolls Royce and Associates for the nuclear steam raising plant. Her hull is broadly of the same design as that of *Dreadnaught*, but she is slightly larger. She was originally scheduled to be completed in Sep 1965, but work was held up by the 'Polaris' programme. The intention to order the third nuclear powered submarine (*Warspite*) from Vickers-Armstrongs Ltd was announced by the Ministry of Defence on 10 Aug 1962, the intention to order the fourth (*Churchill*) on 13 Mar 1965 the, intention to order a fifth on 4 Mar 1966, and the intention to order a sixth on 9 Nov 1966. The proposed order for a seventh nuclear powered fleet submarine, of "Improved" type, was published in the Statement on the 1967-68 Defence Estimates.

ENDURANCE. On 25 Apr 1967 *Valiant* completed the 12,000-mile homeward voyage from Singapore, the record submerged passage by a British submarine, after 28 days non-stop.



VALIANT (surfacing at speed after record submerged voyage from Singapore) 1967, Official

ANTI-SUBMARINE WARFARE. *Valiant* and her sister ships are equipped to hunt and kill enemy submarines and surface warships, with sonar gear to detect at much greater ranges than that fitted in British Conventional submarines.

ENGINEERING. *Valiant's* reactor core was made in Great Britain, with machinery of British design and manufacture similar to the shore prototype installed in the Admiralty Reactor Test Establishment at Dounreay. The main steam turbines and condensers were designed and manufactured by the English Electric Company, Rugby, and the electrical propulsion machinery and control gear by Laurence, Scott & Electromotors Ltd.

NOMENCLATURE. All the names given to British nuclear powered submarines (except *Churchill*, named after the late Sir Winston Churchill, First Lord of the Admiralty during the early part of both World Wars, famous wartime leader, and greatest Prime Minister) are former battleship names of the first and second world wars. The name originally chosen for the second nuclear submarine (*Valiant*) was *Inflexible*.



WARSPITE 1967, Official



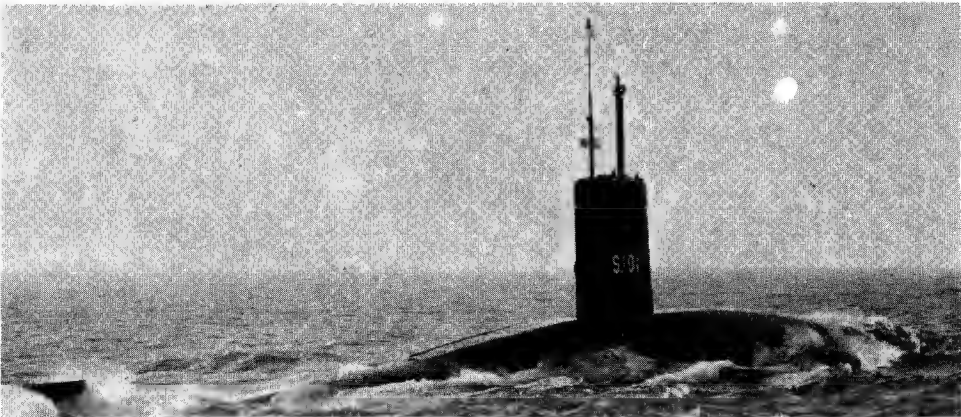
VALIANT 1966, Official

Submarines—continued

Name	No.	Builders	Engineers	Laid down	Launched	Completed (Commissioned)
DREADNOUGHT	S 101	Vickers-Armstrongs, Barrow	Rolls-Royce and Westinghouse	12 June 1959	21 Oct 1960	17 Apr 1963
1 Prototype Nuclear Powered						
Displacement, tons	3 000 standard; 3 500 surface; 4 000 submerged					
Length, feet (metres)	265.8 (81.0)					
Beam, feet (metres)	32.2 (9.8)					
Draught, feet (metres)	26 (7.9)					
Torpedo tubes	6—21 in (533 mm) bow, all internal					
Nuclear reactor	Pressurised water-cooled					
Main engines	Geared steam turbines; 1 shaft					
Speed knots	30 approx					
Complement	88 (11 officers, 77 men)					

The Royal Navy's first nuclear powered submarine, specially designed to hunt and destroy enemy underwater craft. A prominent feature of her design is her whale-shaped hull, the near-perfect streamlining giving maximum underwater efficiency, while the fin-like conning tower is also aimed at reducing "drag" to a minimum. She is capable of continuous high underwater speed and has long endurance. Her hull is British built, but her nuclear plant was manufactured in the United States. It was announced by the Navy on 10 Aug 1959 that the General Dynamics Corporation, USA had been awarded a contract for help in her construction. Cost: £18,455,000.

OFFICIAL STATEMENT. As originally planned *Dreadnought* was to have been fitted with a British designed and built nuclear reactor, but in 1958 an agreement was concluded with the United States Government for the purchase of a complete set of propulsion machinery of the type fitted in USS *Skipjack*. This agreement enabled the submarine to be launched far earlier. The supply of this machinery was made under a contract between the Westinghouse Electric Corporation and Rolls-Royce. The latter were also supplied with design and manufacturing details of the reactor and with safety information and set up a factory in this country to manufacture similar cores. *Dreadnought* has a hull of British design both as regards structural strength and hydrodynamic features, although the latter are based on the pioneering work of the US Navy in *Skipjack* and *Albacore*. From about amidships aft, the hull lines closely resemble *Skipjack* to accommodate the propulsion machinery. The forward end is wholly British in concept. In the Control Room and Attack Centre the instruments are fitted into consoles.



DREADNOUGHT

1967, Official

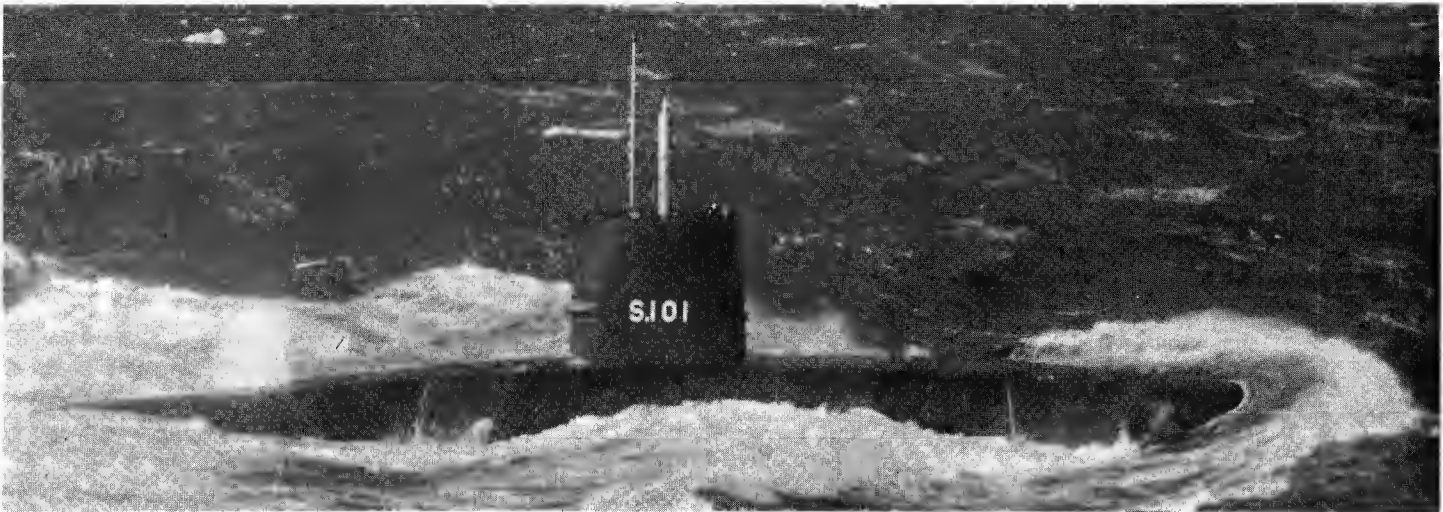
Almost every electrical and mechanical part of the propulsion machinery is installed in duplicate to minimise the inconvenience of breakdowns. In addition, every control feature of the power plant and of the boat is duplicated. These innovations ensure an extremely high standard of reliability which, combined with the need to refuel at only very long intervals, give her the ability to undertake patrols of particularly long endurance at continued high underwater speeds. Accommodation for her crew is of a standard impossible to attain in any previous submarine. The improved water distilling plant for the first time provides unlimited fresh water for shower baths and for washing machines in the fully equipped laundry. Separate mess spaces are provided for senior and junior ratings, arranged on either side of a large galley, equipped for serving meals on the cafeteria system. Particular attention was paid to the decoration and furnishing of living quarters and to recreational facilities which include cinema equipment, an extensive library and tape recordings, features which help to offset the monotony associated with prolonged underwater voyages. She is fitted with an inertial navigation system and with means of measuring her depth below ice.

ROLE. Her primary role is as a submarine hunter killer for which purpose she is equipped with the latest developments in underwater weapons and detection.

MANOEUVRABILITY. This submarine manoeuvres and travels underwater with movements similar to those of an aircraft banking in flight, as she has similar controls.

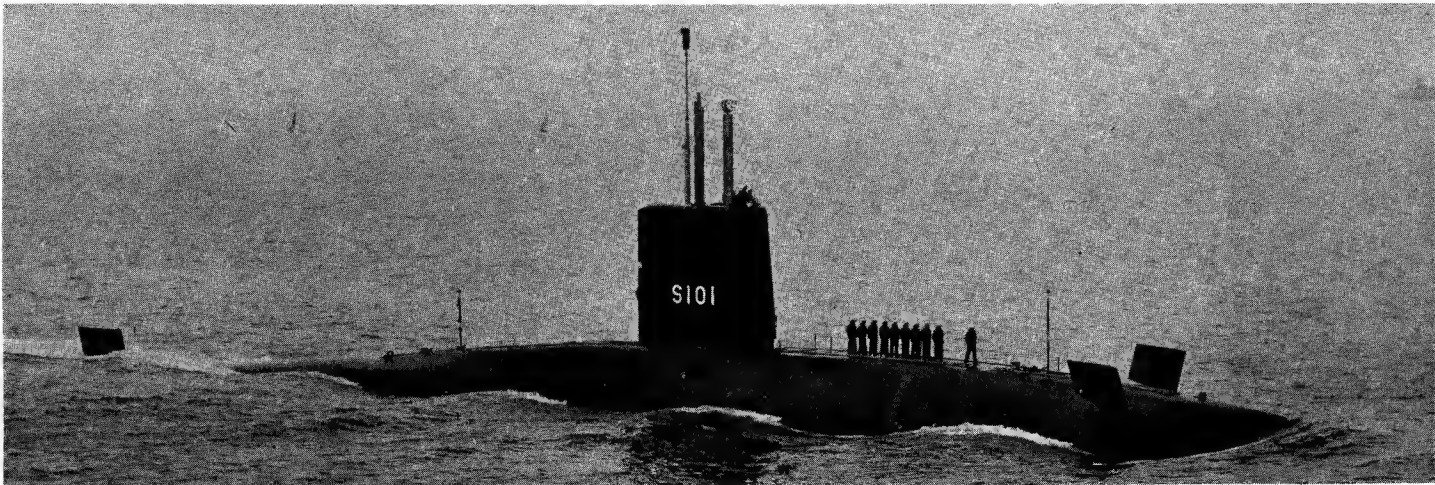
ENGINEERING. A complete nuclear reactor for installation in *Dreadnought* was purchased in the USA. The General Dynamics Corporation Provided design, material and technical assistance in the installation of the propulsion system. The propulsion plant itself was placed under contract to Westinghouse Electric Corporation by Rolls-Royce acting as agents for the Royal Navy.

PHOTOGRAPHS. A starboard quarter oblique aerial view of *Dreadnought* at speed appears in the 1963-64 edition, and a port broadside surface view in the 1963-64 to 1965-66 editions.



DREADNOUGHT

1967, Official



DREADNOUGHT

1966, Wright & Logan

Patrol Submarines

13 "Oberon" Class

Displacement, tons	1 610 standard; 2 030 surface; 2 410 submerged
Length, feet (metres)	241 (73.5) pp; 295.2 (90.0) oa
Beam, feet (metres)	26.5 (8.1)
Draught, feet (metres)	18 (5.5)
Torpedo tubes	8—21 in (533 mm) for homing torpedoes
Main engines	2 ASR 1, 16 VMS diesels; 3 680 bhp; 2 electric motors; 6 000 shp; 2 shafts; electric drive
Speed, knots	12 surface, 17 submerged
Complement	68 (6 officers, 62 men)

This class have improved detection equipment and are capable of high underwater speeds. They are able to maintain continuous submerged patrols in any part of the world and are equipped to fire homing torpedoes.

CONSTRUCTION. For the first time in British submarines plastic was used in the superstructure construction. Before and abaft the bridge the superstructure is mainly of glass fibre laminate in most units of this class. The superstructure of *Orpheus* is of light alloy aluminium.

*The submarine of this class laid down on 27 Sep 1962 at HM Dockyard as *Onyx* for the Royal Navy was launched on 29 Feb 1964 as *Ojibwa* for the Royal Canadian Navy. She was replaced by another "Oberon" class submarine named *Onyx* for the Royal Navy built by Cammell Laird.

PHOTOGRAPHS. Photographs of *Oberon* and *Orpheus* appear in the 1961-62 and 1962-63 editions, of *Otter* in the 1963-64 to 1966-67 editions, and of *Opportune* in the 1965-66 and 1966-67 editions.

DISPOSALS OF "S" CLASS
Sidon, which sank after a torpedo explosion forward in Portland Harbour on 16 June 1955, but was salvaged a week later, was towed out of Portland Harbour and sunk off Portland on 14 June 1957 in 20 to 25 fathoms to be used by the Navy as a target on the sea bottom. *Selene* was discarded in 1957 and subsequently scrapped. *Sleuth* and *Sturdy* were scrapped in 1958, *Subtle* in 1959, *Seneschal* and *Scythian* in 1960, *Solent* in 1961, *Satyr*, *Scorcher* and *Sentinel* in 1962, *Spiteful* and *Statesman* in 1963, and *Scotsman* in 1964. *Sea Devil*, the last operational submarine of this class at sea, was scrapped in 1965, *Seascout* for disposal in mid-Aug 1962, and *Seraph* in 1963 were towed to the shipbreakers in Dec 1965. *Sirdar*, expended in experiments by the Naval Construction Research Establishment at Rosyth, was sold for scrap in 1965.

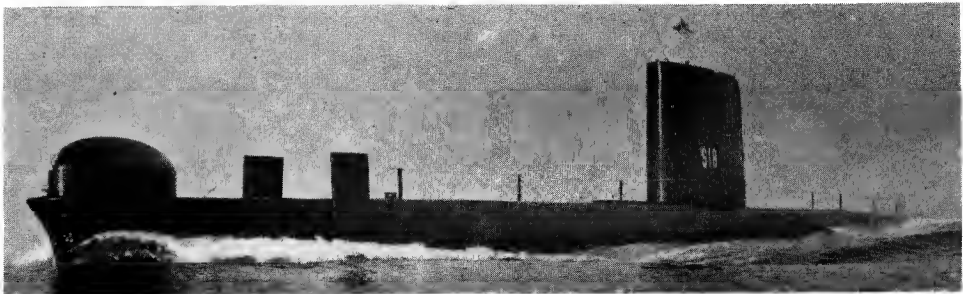
TRANSFERS OF "S" CLASS. *Saga*, *Spearhead* and *Spur* were sold to the Portuguese Navy in 1948 and renamed *Nautilo*, *Neptune* and *Narval*, respectively. *Satyr*, *Spiteful*, *Sportsman* (lost 23 Sep 1962 under the French name *Sibylle*) and *Statesman* were transferred to the French Navy, Oct 1951 to July 1952, but *Spiteful* (on loan under the name *Sirene*) was returned to the Royal Navy on 24 Oct 1958 and towed from Portsmouth to be scrapped on 9 July 1963; *Statesman* (on loan under the name *Sultane*) was returned on 5 Nov 1959; and *Satyr* (on loan under the name *Saphir*) was returned in Aug 1961. *Sanguine* and *Springer* were sold to Israel in Oct 1958. *Springer* was handed over to the Israel Navy at Portsmouth on 9 Oct and renamed *Tanin* (Crocodile) and delivered to Israel in Dec 1959. *Sanguine*, renamed *Rahav*, was delivered to Israel in May 1960.

Name	No.	Builders	Laid down	Launched	Completed
OBERON	S 09	H.M. Dockyard, Chatham	28 Nov 1957	18 July 1959	24 Feb 1961
OCELOT	S 17	H.M. Dockyard, Chatham	17 Nov 1960	5 May 1962	31 Jan 1964
ODIN	S 10	Cammell Laird & Co Ltd, Birkenhead	27 Apr 1959	4 Nov 1960	3 May 1962
OLYMPUS	S 12	Vickers-Armstrongs Ltd, Barrow	4 Mar 1960	14 June 1961	7 July 1962
ONSLAUGHT	S 14	H.M. Dockyard, Chatham	8 Apr 1959	24 Sep 1960	14 Aug 1962
ONYX *	S 21	Cammell Laird & Co Ltd, Birkenhead	16 Nov 1964	18 Aug 1966	
OPOSSUM	S 19	Cammell Laird & Co Ltd, Birkenhead	21 Dec 1961	23 May 1963	5 June 1964
OPPORTUNE	S 20	Scotts' S.B. & Eng Co Ltd, Greenock	26 Oct 1962	14 Feb 1964	29 Dec 1964
ORACLE	S 16	Cammell Laird & Co Ltd, Birkenhead	26 Apr 1960	26 Sep 1961	14 Feb 1963
ORPHEUS	S 11	Vickers-Armstrongs Ltd, Barrow	16 Apr 1959	17 Nov 1959	25 Nov 1960
OSIRIS	S 13	Vickers-Armstrongs Ltd, Barrow	26 Jan 1962	29 Nov 1962	11 Jan 1964
OTTER	S 15	Scotts' S.B. & Eng Co Ltd, Greenock	14 Jan 1960	15 May 1961	20 Aug 1962
OTUS	S 18	Scotts' S.B. & Eng Co Ltd, Greenock	31 May 1961	17 Oct 1962	5 Oct 1963



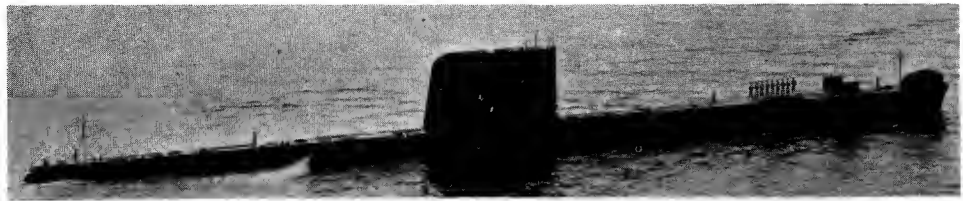
ONSLAUGHT

1967, courtesy Dr Giorgio Arra



OTUS

1967, Wright & Logan



OCELOT

1967, A. & J. Pavia



OSIRIS

1967, Wright & Logan



ORACLE

1967, Skyfotos

Patrol Submarines

8 "Porpoise" Class

Displacement, tons	1 605 standard; 2 030 surface; 2 405 submerged
Length, feet (metres)	241 (73.5) pp; 295.2 (90.0) oa
Beam, feet (metres)	26.5 (8.1)
Draught, feet (metres)	18 (5.5)
Torpedo tubes	8—21 in (533 mm), 6 bow, 2 stern 30 torpedoes carried
Main engines	2 ASR-1, 16 VMS diesel-electric sets, total 3 680 bhp; 2 shafts; 2 main batteries, electric drive; 6 000 shp
Speed, knots	12 on surface; 17 submerged
Complement	71 (6 officers, 65 men)

Porpoise was the first operational submarine designed since the Second World War to be accepted into service. Able to undertake continuous submerged patrol in any part of the world. The design of hull and superstructure gives capabilities of high underwater speed and great diving depth. Stress was also laid on long endurance, both on the surface and submerged, whether on batteries or snorting. Propelled on the surface, or when snorting by diesel-electric drive from Admiralty Standard Range diesels, and from large batteries driving the motors when submerged. The snort equipment was designed to give maximum snort-charging facilities and to operate in rough sea conditions. Both air and surface warning radar can be operated at periscope depth as well as when surfaced. The general habitability is of the highest standard, with strip lighting and air conditioning plant which provides drying and either heating or cooling of the air for arctic or tropical service. Oxygen replenishment and carbon dioxide and hydrogen eliminators make it possible to remain totally submerged without even using snort for several days. Apparatus to distil fresh water from sea water for drinking, and stowage for large quantities of stores and provisions enable the boats to remain on patrol for months without outside support.

ENGINEERING. The propelling machinery was made by the builders except in *Cachalot* and *Walrus*, by HM Dockyard, Chatham.

ELECTRICAL. The electric propulsion system in all eight boats was manufactured by The English Electric Co Ltd, Rugby, and was of more advanced design than hitherto.

PHOTOGRAPHS. A photograph of *Grampus* appears in the 1959-60 edition, of *Rorqual* in the 1959-60 and 1960-61 editions, of *Cachalot* in the 1960-61 and 1961-62 editions, and of *Walrus* in the 1963-64 to 1966-67 editions.

DISPOSALS OF "EX" CLASS
Of the two experimental fast submarines with propelling machinery employing high test peroxide, the first submarines of post-war design to be built for the Royal Navy, *Explorer*, S 30, was discarded in 1963 and scrapped at Barrow in Feb 1965, and *Excalibur*, S 40, was listed for disposal by scrapping in 1965.

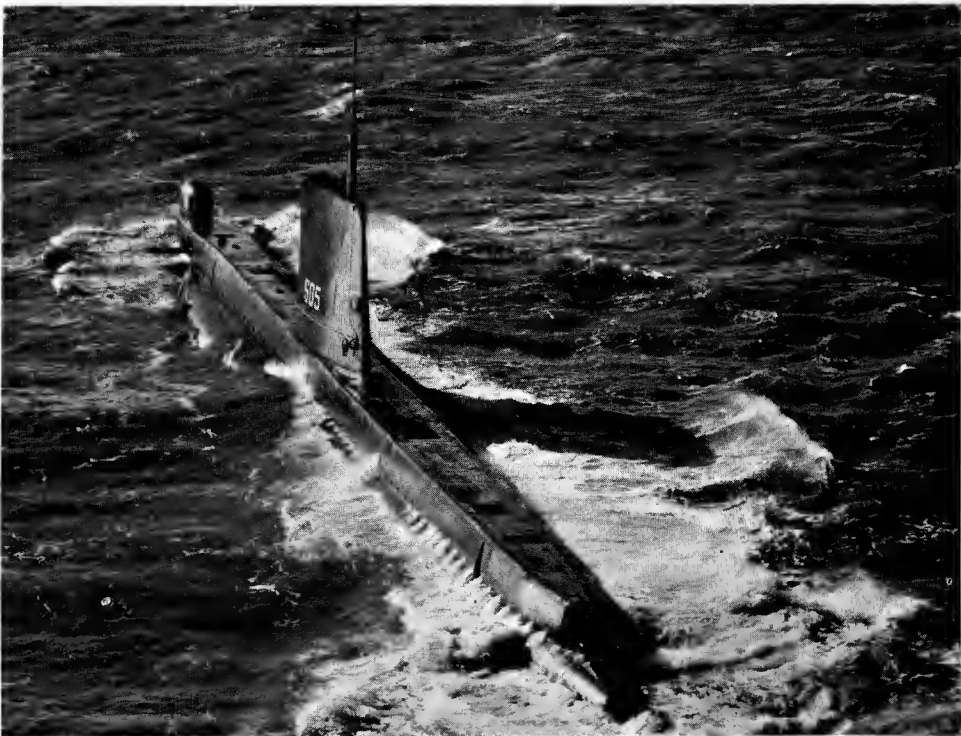
DISPOSALS OF MIDGET CLASS
The three "Midget" Type (X-craft), namely *Minnow* (X-54), *Shrimp* (X-52) and *Sprat* (X-53), were placed on the disposal list in 1961. Sister boat *Stickleback* (X-51) was sold to Sweden on 15 July 1958 and renamed *Spiggen* (Swedish equivalent of "*Stickleback*").

Submarines continued—

Name	No.	Builders	Laid down	Launched	Completed
CACHALOT	S 06	Scotts' S.B. & Eng Co Ltd, Greenock	1 Aug 1955	11 Dec 1957	1 Sep 1959
FINWHALE	S 05	Cammell Laird & Co Ltd, Birkenhead	18 Sep 1956	21 July 1959	19 Aug 1960
GRAMPUS	S 04	Cammell Laird & Co Ltd, Birkenhead	16 Apr 1955	30 May 1957	19 Dec 1958
NARWHAL	S 03	Vickers-Armstrongs Ltd, Barrow	15 Mar 1956	25 Oct 1957	4 May 1959
PORPOISE	S 01	Vickers-Armstrongs Ltd, Barrow	15 June 1954	25 Apr 1956	17 Apr 1958
RORQUAL	S 02	Vickers-Armstrongs Ltd, Barrow	15 Jan 1955	5 Dec 1956	24 Oct 1958
SEALION	S 07	Cammell Laird & Co Ltd, Birkenhead	5 June 1958	31 Dec 1959	25 July 1961
WALRUS	S 08	Scotts' S.B. & Eng Co Ltd, Greenock	12 Feb 1958	22 Sep 1959	10 Feb 1961



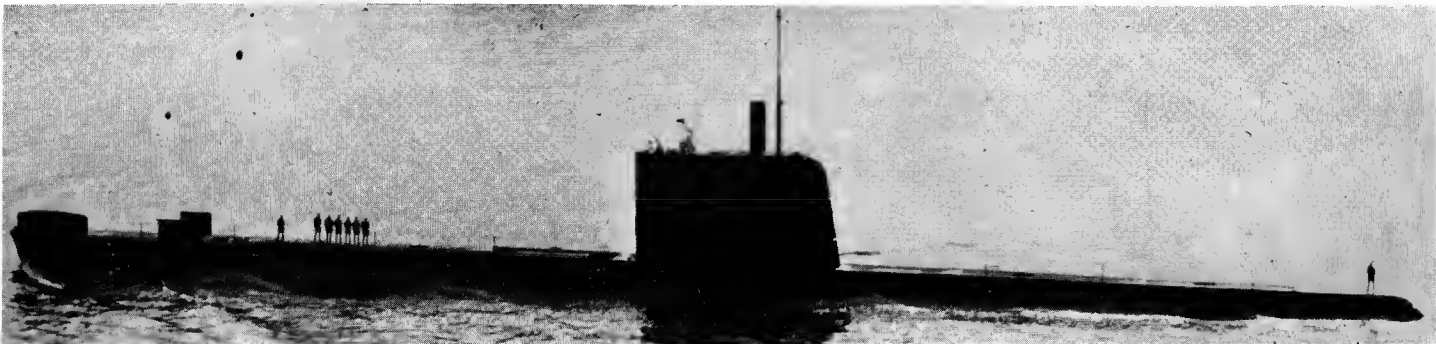
SEALION 1966, Wright & Logan



FINWHALE 1967, Official



NARWHAL 1967, A. & J. Pavia



PORPOISE 1967, A. & J. Pavia

Submarines—continued

Patrol Submarines

14 "A" Class

Displacement, tons,	1 120 standard; 1 385 surface; 1 620 submerged
Length, feet (metres)	221 (67.4) pp; 283 (86.3) oa
Beam, feet (metres)	22.2 (6.8)
Draught, feet (metres)	17 (5.2)
Guns	Removed (see <i>Gunnery</i> notes)
Torpedo tubes	6—21 (533 mm) internal, 4 bow, 2 stern; 16 torpedoes carried External tubes removed (see notes)
Main engines	8-cyl. diesel, 4 300 bhp
Speed, knots	Electric motors, 1 250 hp
Oil fuel (tons)	19 on surface, 8 submerged
Complement	159
	60 to 68 (5 officers, 63 men)

These submarines were originally designed for service in the Pacific, and had a different hull from the "T" class. Construction was entirely welded. All have "Snort" breathing equipment. *Alliance* and *Ambush*, so fitted, remained submerged for record periods in 1947-48. On 15 June 1953, *Andrew* completed a 2 500 sea miles underwater voyage from Bermuda to the English Channel in 15 days, a record for "snorting" in the Royal Navy.

GUNNERY. Some boats of this class had the 4-inch guns removed before reconstruction. Others mounted the 4-inch gun temporarily after reconstruction. *Alderney* and others are fitted with a mounting for a gun. *Aeneas* had a 4-inch gun mounted in Feb 1960 and again carried a gun before the conning tower in 1966. *Artemis* mounted a 4-inch gun in 1960, after reconstruction.

CONVERSION. The "A" class were rebuilt and streamlined with an enclosed fin conning tower 26.5 feet high. *Artful* was the first to undergo reconstruction in 1955 followed by the remainder of this class.

TORPEDO TUBES. Originally mounted 10—21 inch (4 external) as designed, and carried 20 torpedoes. External tubes (two bow and two stern) were removed.

PHOTOGRAPHS. A photograph of *Artful* appears in the 1958-59 and 1959-60 edition, of *Acheron* (before reconstruction) in the 1957-58 edition, of *Anchorite* (before reconstruction) in the 1957-58 edition, of *Artemis* (after reconstruction) with gun in the 1960-61 and 1961-62 editions, of *Alaric* (before reconstruction) in the 1958-59 to 1961-62 editions, of *Artful* (after second reconstruction) in the 1959-60 to 1962-63 editions, of *Auriga* in the 1960-61 to 1962-63 editions, of *Artemis* without gun in the 1962-63 to 1966-67 editions, of *Acheron* and *Aeneas* in the 1964-65 to 1966-67 editions, and of *Alliance* in the 1965-66 and 1966-67 editions.

CLASS. The following 30 units were cancelled, though some had actually been launched. *Abalard*, *Acasta*, *Ace*, *Achates*, *Adept*, *Admirable*, *Adversary*, *Agate*, *Aggressor*, *Agile*, *Aladdin*, *Alcestis*, *Andromache*, *Answer*, *Antaeus*, *Antagonist*, *Anzac*, *Aphrodite*, *Approach*, *Arcadian*, *Argent*, *Argosy*, *Asgard*, *Asperity*, *Assurance*, *Astarte*, *Atlantis*, *Austere*, *Awake*, *Aztec*.

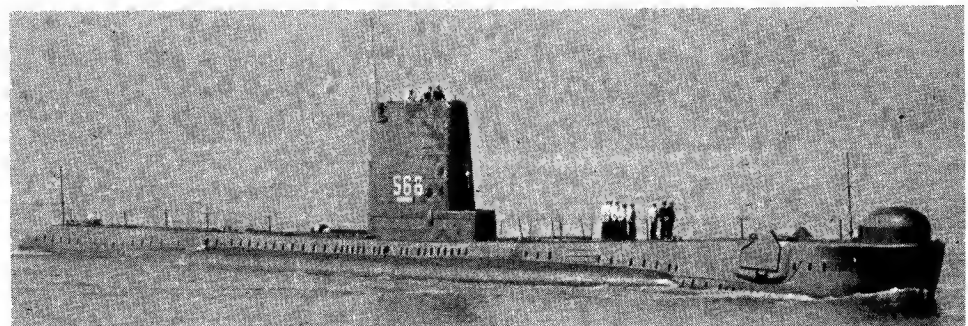
LOSS. *Affray* was lost in the English Channel on 17 Apr 1951.

NOMENCLATURE. *Amphion* was originally to have been named *Anchorite* and *Anchorite* was originally to have been named *Amphion*.

PENNANT NOS. The pennant numbers of most of the "A" Class submarines (and all "O" class submarines) were changed on 1 May 1961 (see *Note* at the head of the pennant list on earlier page).

DISPOSAL
Aurochs, the only one of the class not converted, was listed for disposal in Sep 1965, towed away from Portsmouth on 9 May 1966, and broken up at Troon in Feb 1967.

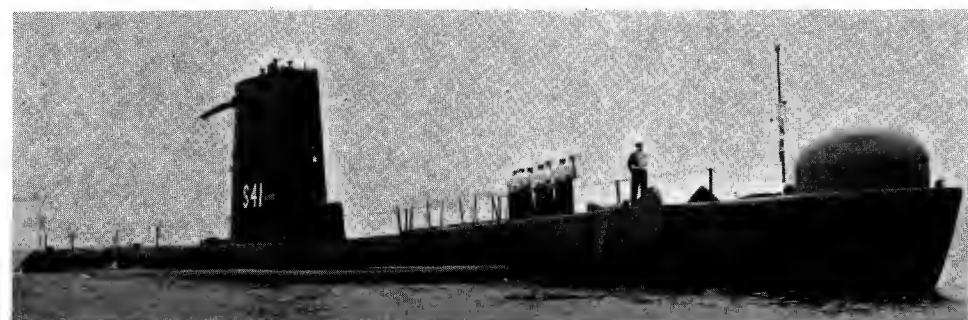
Name	No.	Builders	Laid down	Launched	Completed
ACHERON	S 61	H.M. Dockyard, Chatham	26 Aug 1944	25 Mar 1947	17 Apr 1948
AENEAS	S 72	Cammell Laird & Co Ltd, Birkenhead	10 Oct 1944	25 Oct 1945	31 July 1946
ALARIC	S 41	Cammell Laird & Co Ltd, Birkenhead	31 May 1944	18 Feb 1946	11 Dec 1946
ALCIDE	S 65	Vickers-Armstrongs Ltd, Barrow	2 Jan 1945	12 Apr 1945	18 Oct 1946
ALDERNEY	S 66	Vickers-Armstrongs Ltd, Barrow	6 Feb 1945	25 June 1945	10 Dec 1945
ALLIANCE	S 67	Vickers-Armstrongs Ltd, Barrow	13 Mar 1945	28 July 1945	14 May 1947
AMBUSH	S 68	Vickers-Armstrongs Ltd, Barrow	17 May 1945	24 Sep 1945	22 July 1947
AMPHION	S 43	Vickers-Armstrongs Ltd, Barrow	14 Nov 1943	31 Aug 1944	27 Mar 1945
ANCHORITE	S 64	Vickers-Armstrongs Ltd, Barrow	19 July 1945	22 Jan 1946	18 Nov 1947
ANDREW	S 63	Vickers-Armstrongs Ltd, Barrow	13 Aug 1945	6 Apr 1946	16 Mar 1948
ARTEMIS	S 49	Scotts' S.B. & Eng Co Ltd, Greenock	28 Feb 1944	26 Aug 1946	15 Aug 1947
ARTFUL	S 96	Scotts' S.B. & Eng Co Ltd, Greenock	8 June 1944	22 May 1947	23 Feb 1948
ASTUTE	S 47	Vickers-Armstrongs Ltd, Barrow	4 Apr 1944	30 Jan 1945	30 June 1945
AURIGA	S 69	Vickers-Armstrongs Ltd, Barrow	7 June 1944	29 Mar 1945	12 Jan 1946



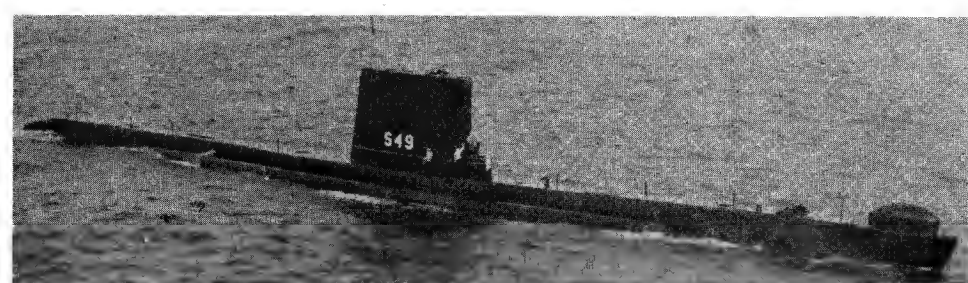
ALDERNEY 1966, courtesy Dr Giorgio Arra



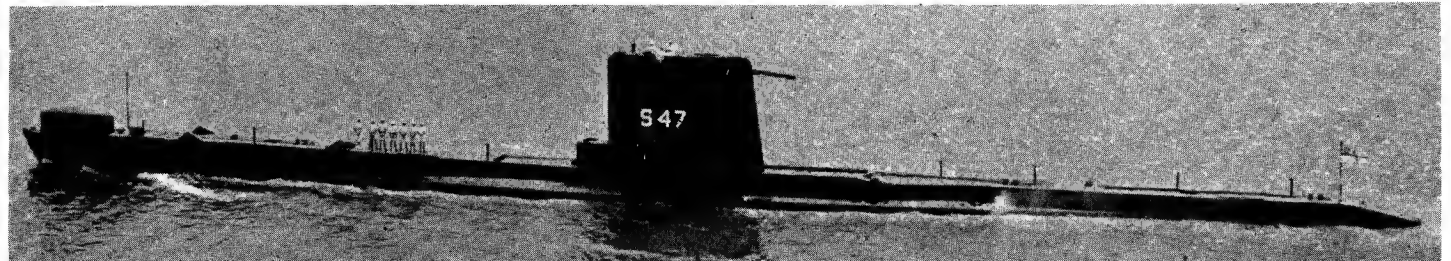
AENEAS 1967, Wright & Logan



ALARIC 1967, Wright & Logan



ARTEMIS 1967, A. & J. Pavia



ASTUTE 1967, Official

Patrol Submarines.

8 "T" Class

Displacement, tons	
<i>Talent, Token</i>	1 090 standard; 1 321 surface; 1 571 submerged
<i>Taciturn, Thermopylae</i>	1 280 standard; 1 505 surface; 1 700 submerged
<i>Tabard, Tiptoe,</i> <i>Trump and Truncheon</i>	1 310 standard; 1 535 surface; 1 740 submerged
Length, feet (metres)	
<i>Talent, Token</i>	265 (80·8) pp; 273·5 (83·4) oa
<i>Thermopylae</i>	285·5 (87·0) oa
<i>Taciturn</i>	287·5 (87·6) oa
<i>Tabard, Tiptoe, Trump</i> <i>and Truncheon</i>	293·5 (89·5) oa
Beam, feet (metres)	26·5 (8·1)
Draught, feet (metres)	14·8 (4·5)
Guns	Removed. Originally carried, 1—4 in (102 mm) (see <i>Reconstruction</i>)
Torpedo tubes	6—21 in (533 mm), 4 bow, 2 stern 20 homing torpedoes carried (see <i>Torpedo</i> notes)
Main engines	Diesels, 2 500 bhp in all boats; Electric motors, 2=1 450 hp (<i>Talent, Token</i>); 4=2 900 hp in converted boats
Speed, knots	15·25 on surface, all boats 15 to 18 submerged in converted boats; 9 in remainder
Oil fuel (tons)	132 in <i>Talent</i> and <i>Token</i> 250 in remainder
Complement	59 to 65 (6 officers, 59 men)

Officially described as "Patrol" submarines for general service. Of saddle-tank design, they originally had an endurance equal to a 42-day patrol. All were subsequently fitted with "Snort" equipment. Eight of the surviving boats of this class were converted and rebuilt into the most advanced submarines. From them were developed the "Porpoise" and "Oberon" classes.

RECONSTRUCTION. Rebuilding of the eight boats of the "conversion" type in 1951-56 was drastic. The pressure hull was severed at the engine-room section, the two halves moved apart and a new section built in. The extra space accommodated a second pair of electric motors, clutches between which and the original motors made diesel-electric drive possible, and a fourth battery section was added to give a submerged speed of 15 knots. All guns and external torpedo tubes were removed. Improved periscopes, sonar and radar were installed with a periscopic snort mast. *Tabard* and *Trump* had the bridge built into the fin, which housed two periscopes, two radar masts, two snort masts, and an aerial. In the other six the bridge was reduced to a cramped cab before the fin. Alteration of the five boats of the "modernised" type in 1955-60 was less radical. They were streamlined with the formerly prominent periscope standards and aerials enclosed in a conning tower "fin" or "sail" which also contained the bridge. All guns, external torpedo tubes and obstructions were removed, and the resulting streamlining improved speed without increase in engine power. They were also much more silent under water and could use their improved sonar with enhanced efficiency. For specific operations a gun could be quickly mounted.

There is a considerable difference between the super "T" class "Conversions" (*Tabard, Tiptoe, Trump, Truncheon*) which have welded pressure hulls and had an additional section of about 20 feet built into them (*Taciturn* was lengthened by 14 feet, and *Thermopylae*, by 12 feet), and the "T" class "Streamlines" (*Talent, Token*) which are riveted hulled boats and therefore did not undergo the full conversion. Underwater speed of *Thermopylae* conversion types (after reconstruction, streamlined hull, more motors, greater batteries) is 15 knots and *Taciturn* is reported to have developed more than twice her previous maximum underwater speed.

TORPEDO TUBES. Originally mounted 11—21 inch (3 external) as designed. External tubes removed.

APPEARANCE. *Talent* and *Token* were modernised and streamlined. *Tabard, Taciturn, Thermopylae, Tiptoe, Trump* and *Truncheon* were rebuilt. *Talent* had a gun (old 4 inch remodelled) with no shield, now removed.

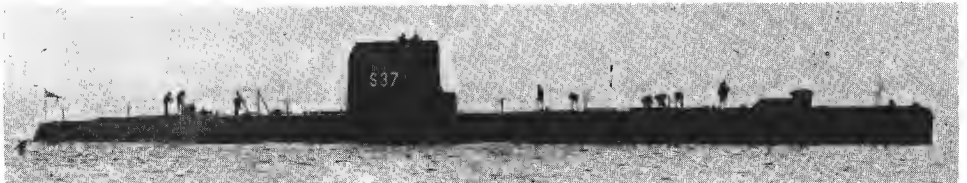
Submarines—continued

Name	No.	Builders	Laid down	Launched	Completed
TABARD	S 42	Scotts' S.B. & Eng Co, Greenock	6 Sep 1944	21 Nov 1945	25 June 1946
TACITURN	S 34	Vickers-Armstrongs Ltd, Barrow	9 Mar 1943	7 June 1944	7 Oct 1944
TALENT	S 37	Vickers-Armstrongs Ltd, Barrow	21 Mar 1944	13 Feb 1945	26 July 1945
THERMOPYLAE	S 55	H.M. Dockyard, Chatham	26 Oct 1943	27 June 1945	5 Dec 1945
TIPTOE	S 32	Vickers-Armstrongs Ltd, Barrow	10 Nov 1942	25 Feb 1944	13 June 1944
TOKAN	S 28	H.M. Dockyard, Portsmouth	6 Nov 1941	19 Mar 1943	15 Dec 1945
TRUMP	S 33	Vickers-Armstrongs Ltd, Barrow	31 Dec 1942	25 Mar 1944	9 July 1944
TRUNCHEON	S 53	H.M. Dockyard, Devonport	5 Nov 1942	22 Feb 1944	25 May 1945



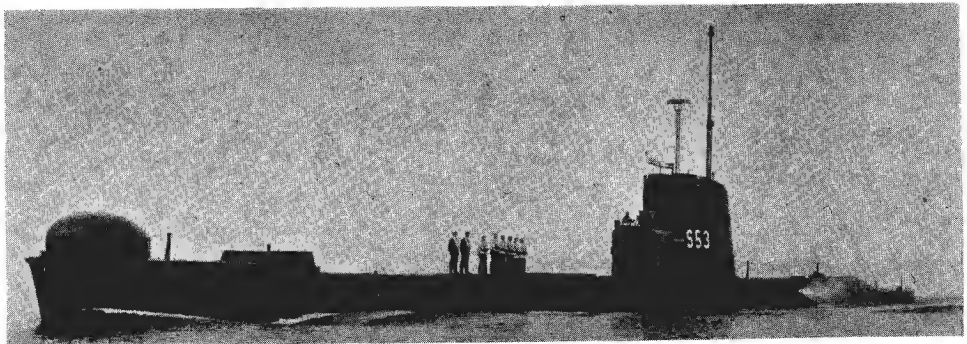
THERMOPYLAE

1965, A. & J. Pavia



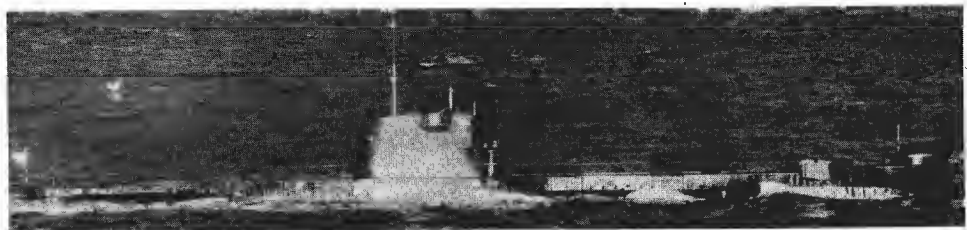
TALENT

1965, Dr Giorgio Arra



TRUNCHEON

1967, Wright & Logan



TACITURN

1967, Official

The appearance of submarines, with or without guns, etc, is liable to change frequently and quickly according to operational and experimental requirements.

PHOTOGRAPHS. A photograph of *Tabard* appears in the 1964-65 to 1966-67 editions, and of *Tiptoe* and *Trump* in the 1963-64 to 1966-67 editions.

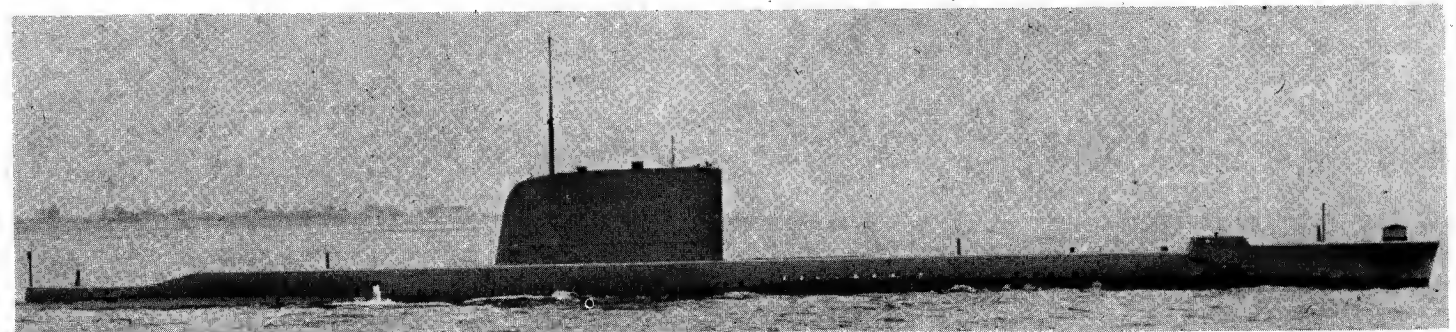
NOMENCLATURE. *Talent* was originally to have been named *Tasman*.

TRANSFERS. *Talent* (renamed *Zwaardvis*) and *Tarn* (renamed *Tijgerhaai*) were transferred to the Royal Netherlands Navy. Two lent to the Royal Netherlands Navy in June 1948 were returned to the Royal Navy in 1953, *Tapir* (Netherlands name *Zeehond*) on July 16 and *Taurus* (Netherlands name *Dolfijn*) on Dec 8. *Totem* and *Turpin* (converted boats) were transferred to the Israeli Navy in 1965 and renamed *Dakar* (Shark) and *Leviathan* (Whale), respectively.

DISPOSALS

Truculent sank after collision in the Thames Estuary on 12 Jan 1950, was salvaged on 14 Mar, but was scrapped on 5 Apr 1950. *Tantalus, Tantivy* and *Templar* were discarded in 1950. *Tradewind* was scrapped in 1955. *Taurus* and *Thorough* were approved to be scrapped in 1958 when they awaited tow to the shipbreakers or disposal otherwise as targets in 1960. *Telemachus* and *Trespasser* were scrapped in 1961, *Thule* (damaged in collision in 1960) in 1962. *Tactician, Trenchant* and *Tudor* in 1963. *Tally Ho* (latterly harbour training), *Tapir* and *Tireless* ("Streamlines") were on the disposal list in 1964. *Teredo* ("Streamline") was sold for scrap in 1965.

SECOND WORLD WAR LOSSES: *Talisman, Tempest, Thorn, Thunderbolt* (ex-*Thetis*), *Tigais, Tarpon, Traveller, Trooper, Tetrach, Thistle, Triad, Triton, Triumph, Turbulent, P 311*. Cancelled: *Talent* (1) (P 343), *Theban, Thor, Threat, Tiara*.



TABARD

1967, Official

ASSAULT SHIPS

Name	No.	Builders	Ordered	Laid down	Launched	Completion
FEARLESS	L 10 (ex-L 3004)	Harland & Wolff Ltd, Belfast	1 Dec 1961	25 July 1962	19 Dec 1963	25 Nov 1965
INTREPID	L 11 (ex-L 3005)	John Brown & Co, (Clydebank) Ltd	1 May 1962	19 Dec 1962	25 June 1964	11 Mar 1967

2 Amphibious Cruiser Type

Displacement, tons	11 060 standard; 12 120 full load
	16 950 ballasted
Length, feet (metres)	500 (152.4) wl; 520 (158.5) oa
Beam, feet (metres)	80 (24.4)
Draught, feet (metres)	20.5 (6.2)
Draught, ballasted	32 (9.8) aft; 23 (7.0) fwd;
	27.5 (8.4) mean
Landing craft	4 LCM(9) in dock;
	4 LCVP at davits
Vehicles	Specimen load: 15 tanks, 7 three-ton and 20 quarter-ton trucks (20 three tonners on flight deck)
Aircraft	Flight deck facilities for 5 Wessex helicopters (6 operable)
Missiles, AA	4 "Seacat" systems
Guns, AA	2—40 mm Bofors
Boilers	2 Babcock & Wilcox
Main engines	2 EE turbines
	22 000 shp; 2 shafts
Speed, knots	21
Complement	556 (36 officers, 520 men)
	111 Royal Marines and Army

Assault ships of a new design, which, with commando carriers, replace the former ships of the Amphibious Warfare Squadron. They carry landing craft which can be floated through the open stern by flooding compartments of the ship and lowering her in the water, are able to deploy tanks, vehicles and men; have seakeeping qualities much superior to those of tank landing ships, and their speed and range is greater. Capable of operating independently. Also able to serve as Command Ships at sea for transit operations and as Headquarters Ships in the assault area. Another valuable feature is a helicopter platform which is also the deckhead of the covered well or dock from which the landing craft are floated out. The vessels have a new type of hull combining features of both an escort aircraft carrier and a troop transport with the basic lines of a cruiser and a dock landing ship. Officially estimated building cost of *Fearless* is £11 250 000.

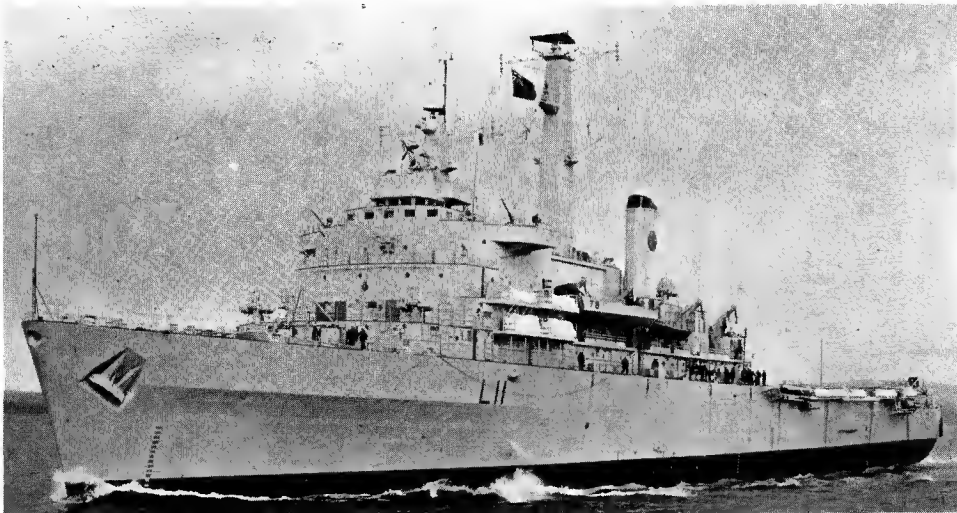
ENGINEERING. The funnels are staggered across the beam of the ship, indicating that the engines and boilers are arranged *en echelon*, two machinery spaces having one turbine and one boiler installed in each space, the port shaft being longer than the starboard. The main machinery is arranged in two self contained units, each driving one shaft. The steam turbines were manufactured by the English Electric Co, Rugby, the main gearing by David Brown & Co, Huddersfield. Boilers work at a pressure of 550 lbs per sq in and a temperature of 850 deg F.

ELECTRICAL. Power at 440V 60 c/s 3-phase a.c. is supplied by four 1 000 kW AE1 turbo-alternators.

OPERATIONAL. Each ship is fitted out as a Naval Assault Group/Brigade Headquarters with an Assault Operations Room from which naval and military personnel, working in close co-operation, can mount and control the progress of an assault operation. Equipped with latest radio aids so that the Admiralty Board can send teleprinter messages wherever ships are operating. H.F. transmitters enable ships to communicate with Commonwealth or Allied receiving stations. Also able to maintain contact with other ships, aircraft, military authorities and associated landing craft which may be operating with them. Each ship operates with a Royal Marine Commando or infantry battalion.

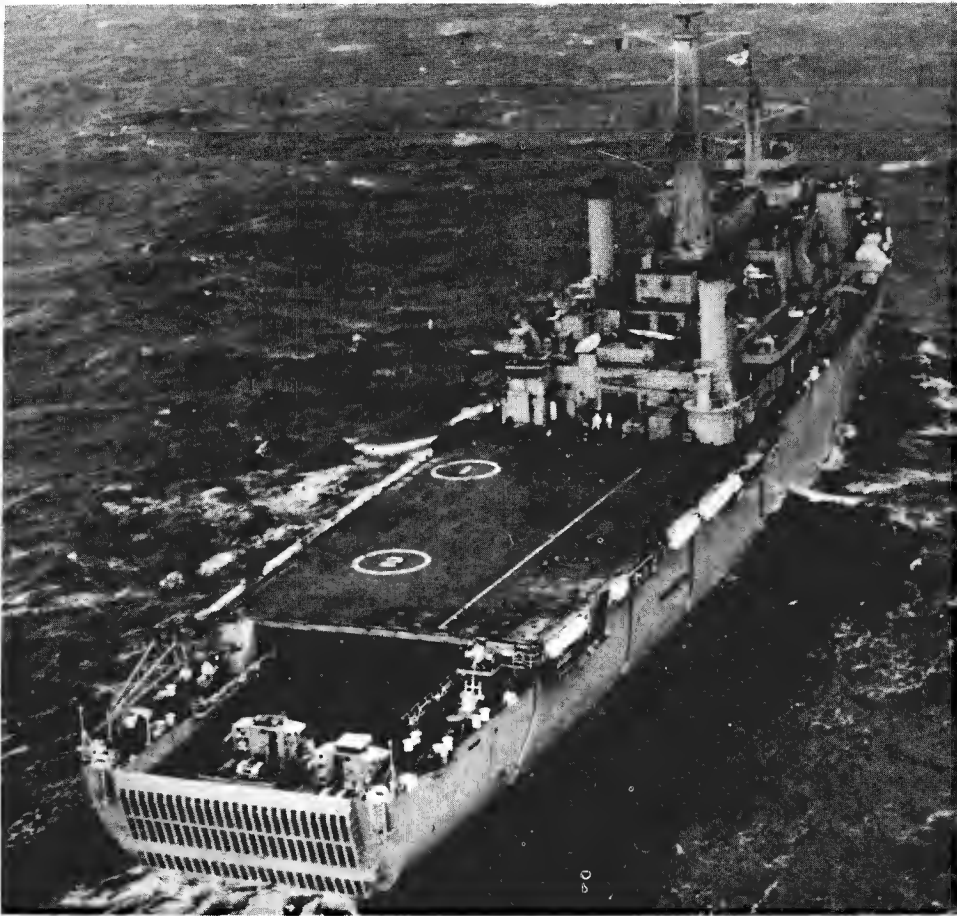
In the 1966-67 Defence Estimates these assault ships were listed after aircraft carriers and commando ships and before cruisers and destroyers.

TROOPS. Each ship can carry 380 to 400 troops at ship's company standards, and an overload of 700 marines and military personnel can be accommodated for short periods.



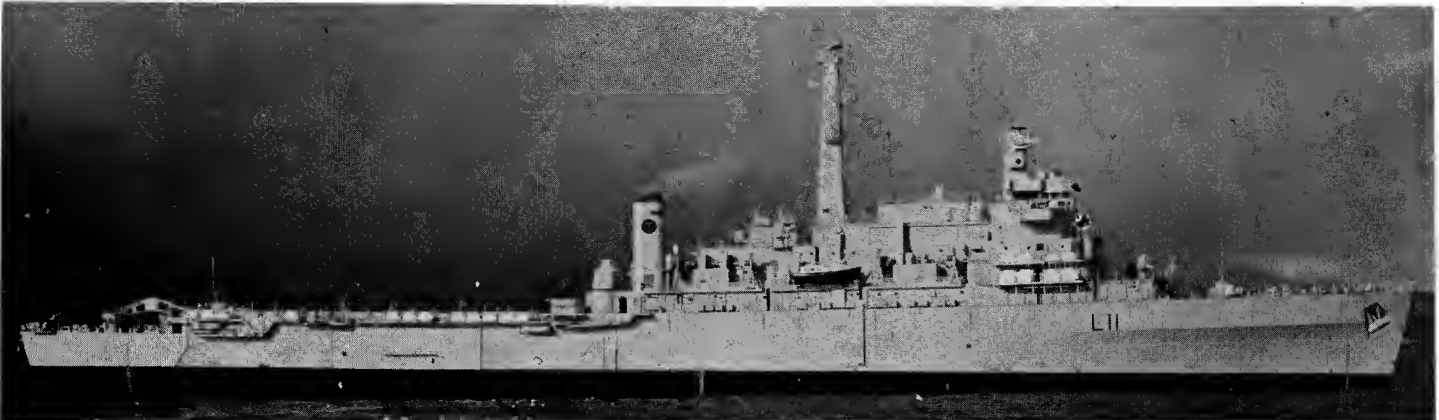
INTREPID

1967, Official



FEARLESS

1966, Official



INTREPID

1967, Official

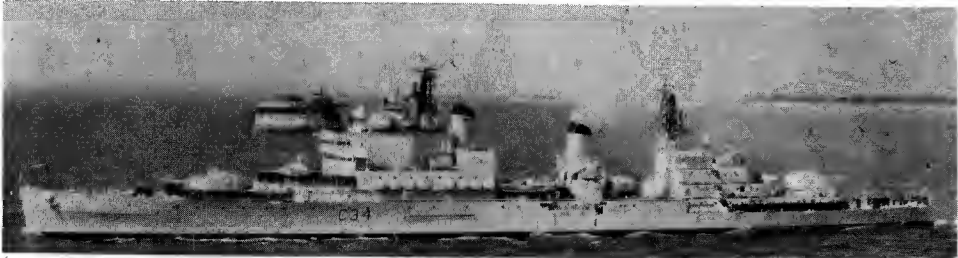
CRUISERS

3 "Tiger" Class

Displacement, tons	9 550 standard; 12 080 full load
Length, feet (metres)	538 (164.0) pp; 550 (167.6) wl 555.5 (169.3) oa
Beam, feet (metres)	64 (19.5)
Draught, feet (metres)	21.8 (6.6)
Guns	As cruisers; 4—6 in (152 mm); 2 twin, 6—3 in (76 mm); 3 twin Belt 3½ in—3¼ in (89—83 mm); deck 2 in (51 mm); turrets 3 in—1 in (76—25 mm)
Armour	4 Admiralty 3-drum
Boilers	4 Parsons geared turbines
Main engines	80 000 shp; 4 shafts
Speed, knots	31.5
Radius, miles	2 100 at full power 4000 at 20 knots 6 500 at 13 knots
Oil fuel (tons)	1 850
Complement	716 (52 officers, 664 ratings)

Name	No.	Builders and Engineers	Laid down	Launched	Completed
BLAKE (ex-Tiger, ex-Blake)	C 99	Fairfield SB & Eng Govan	17 Aug 42	20 Dec 45	8 Mar 61
LION (ex-Defence)	C 34	Scotts' SB & Eng, Greenock*	24 June 42	2 Sep 44	20 July 60
TIGER (ex-Bellerophon)	C 20	John Brown, Clydebank	1 Oct 41	25 Oct 45	18 Mar 59

*To launching stage. Completed by Swan, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne. Main machinery completed by the Wallsend Slipway & Engineering Co Ltd, Wallsend-on-Tyne.



LION

Added 1967

Designed to provide close cover and anti-aircraft support for convoys, aircraft carrier groups and assault landings. Other rôles include military and policing duties in any part of the world. Originally designed displacement was 8 000 tons. Work on them was stopped in July 1946, for eight years. Decision to complete them announced on 15 Oct 1954. Dismantled ready for resumption to new design in 1955. *Tiger* cost £13 113 000, *Lion* £14 375 000, *Blake* £14 940 000.

CONVERSION. Early in 1965 *Blake* was taken in hand for conversion at HM Dockyard, Portsmouth, expected to be completed late 1968. The reconstruction involves the suppression of the after 6 inch turret and the provision of a flight deck and hangar for operating Sea King anti-submarine helicopters. *Tiger* will be similarly converted by 1969. Conversion of *Lion* was not mentioned in the 1967-68 Estimates.

GUNNERY. As originally designed guns included nine 6 inch, ten 4 inch. The 6 inch fully automatic guns of advanced design are equally effective in surface and anti-aircraft rôles. Rate of fire is twenty rounds per minute, more than twice that of any previous cruiser. The 3 inch guns are capable of 120 rpm. The guns are fitted with a comprehensive direction system which enables all turrets to be controlled by radar. Each Mk 26 6 inch turret weighs 163 tons and each Mk 6 3 inch turret 38.5 tons. *Tiger* has small radar aerials on top of each 3 inch gunhouse.

OPERATIONAL. Ships conned from totally enclosed bridge, the first fitted in British cruisers. 200-line automatic telephone exchange facilitates internal communications.

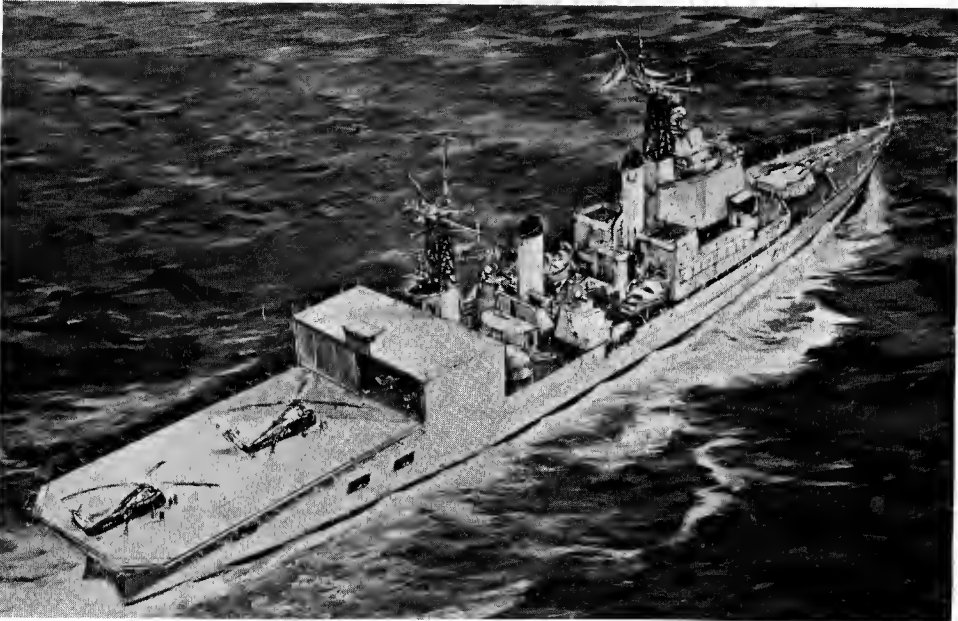
ENGINEERING. The main machinery is largely automatic and can be remotely controlled. Steam conditions at 400 psi pressure and 640°F. Propellers 285 rpm.

ELECTRICAL. Four turbo-generators provide over 4 000 kilowatts of alternating current, the first time this type of power was used in British cruisers.

TORPEDOES. Originally designed to mount eight 21-inch torpedo tubes in two quadruple banks.

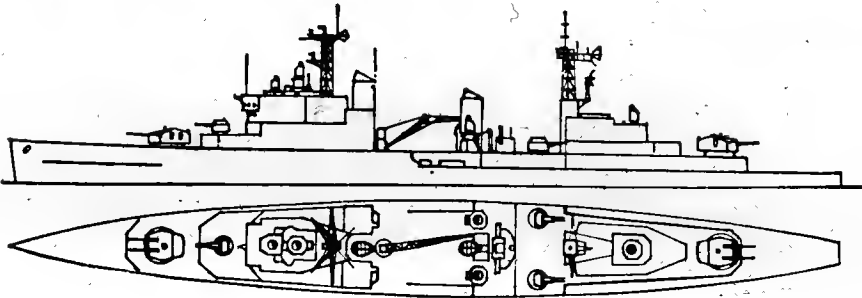
HABITABILITY. Complete air-conditioning is installed. Generous electrical equipment is provided for all domestic and recreational purposes. Accommodation is of a much higher standard than in previous cruisers.

PHOTOGRAPHS. *A starboard quarter oblique aerial view of *Lion* appears in the 1962-63 to 1964-65 editions, a starboard broadside view in the 1960-61 and 1961-62 editions, and a starboard bow surface view in the 1965-66 and 1966-67 editions. A dead overhead aerial view of *Tiger* appears in the 1960-61 edition and a port dead broadside surface view in the 1964-65 to 1966-67 editions.



BLAKE (artist's impression as helicopter carrier)

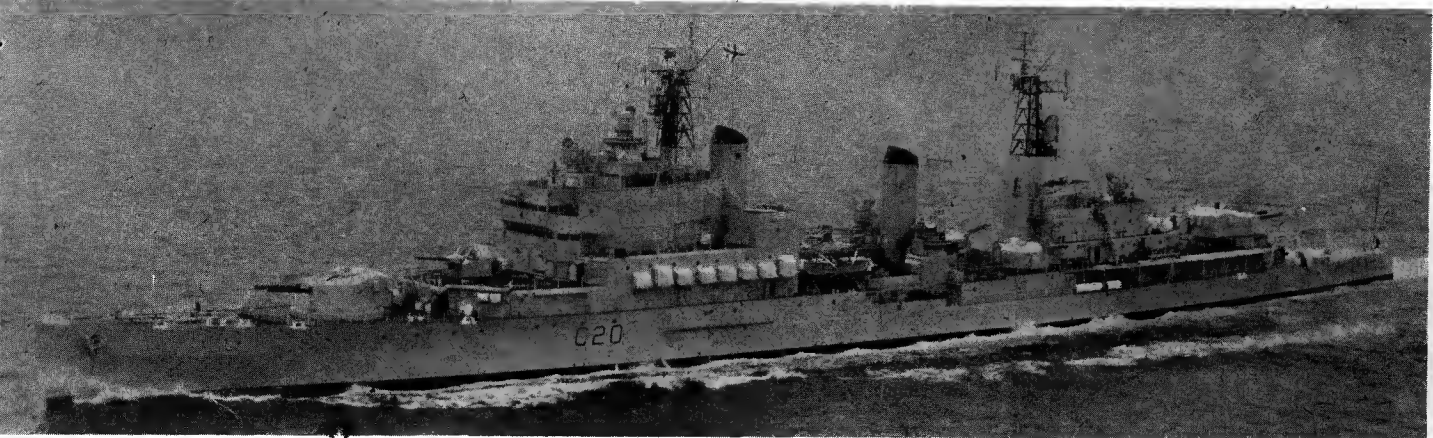
1964, Official



CLASS. *Hawke* of this class, laid down at HM Dockyard, Portsmouth in Aug 1944, was cancelled in 1946, as was *Bellerophon* (ex-*Tiger*) a cruiser of enlarged design ordered from Vickers-Armstrongs.

NOMENCLATURE. The name of *Defence* was changed to *Lion* in 1957 (announced 8 Oct 1957).

DRAWING. Port elevation and plan before conversion. Scale 128 feet = 1 inch.



TIGER

1967, Skyfotos

Cruisers—continued

Name	No.	Builders	Laid down	Launched	Completed
BELFAST	C 35	Harland & Wolff, Ltd, Belfast	10 Dec 1936	17 Mar 1938	3 Aug 1939

Displacement, tons	11 550 standard; 14 930 full load
Length, feet (metres)	579 (176.5) pp; 606 (184.7) wl; 613.5 (187.0) oa
Beam, feet (metres)	69 (21.0)
Draught, feet (metres)	23 (7.0)
Guns, surface	12—6 in (152 mm)
Guns, AA	8—4 in (102 mm); 8—40 mm
Armour	Side 5 in—3 in (127—76 mm); turrets 2½ in (63 mm); deck 2 in (51 mm)
Torpedo tubes	Removed (see <i>Torpedoes</i>)
Boilers	4 Admiralty 3-drum
Main engines	Parsons geared turbines 80 000 shp; 4 shafts
Speed, knots	32.5
Radius, miles	8 000 at 14 knots
Oil fuel (tons)	2 260
Complement	710 (52 officers, 658 men)

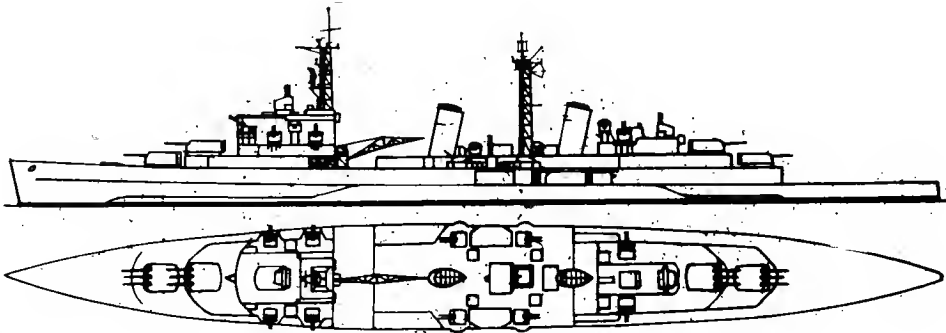
Improved "Southampton" type. The largest cruiser in the Royal Navy. Designed displacement was 10 000 tons with beam of 63.5 feet. Built under the 1936 Navy Estimates. Internal subdivision is exceptionally complete. Was rebuilt after being heavily damaged by a mine early in the Second World War, beam being increased and other alterations made. Refitted at Devonport early in 1963 and placed in Reserve. Arrived at Portsmouth on 4 May 1966 to relieve *Sheffield* as Headquarters of the Commodore Reserve Ships and was reclassified as harbour accommodation ship on 15 June 1966.

GUNNERY. Until her 1956-59 reconstruction the light anti-aircraft armament comprised two 8-barrelled 2 pdr and nine single 40 mm.

TORPEDOES. The 6—21 inch torpedo tubes originally mounted in triple banks were removed during 1956-59 refit.

PROTECTION. Designed to withstand 8-inch shellfire. The armour extends over the length of the citadel, and the protective deck across the ship's breadth above the magazines.

PHOTOGRAPHS. A broadside view appears in the 1959-60 edition, a starboard broadside view before second reconstruction in the 1957-58 and 1958-59 editions, a port broadside view after reconstruction in the 1959-60 to 1961-62 editions, and a port oblique aerial view in the 1962-63 edition.



DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.

FIRST RECONSTRUCTION. When she was mined her back was broken, and in the course of repairs, to strengthen her, she was fitted with an external bulge adding approximately 3 feet each side. This bulge roughly covered the same areas as the armour belt above the water line. Besides providing additional under-water protection, it improved the ship's stability, thereby enabling her to retain her entire 6-inch armament despite extra top weight having been added.

SECOND RECONSTRUCTION. In 1956 *Belfast* began her second reconstruction and modernisation. This was completed on 12 May, 1959. Extensive modifications included lattice masts, a new operations room, new type covered bridge, modernised armament and improved habitability. This reconstruction cost £5 553 000.

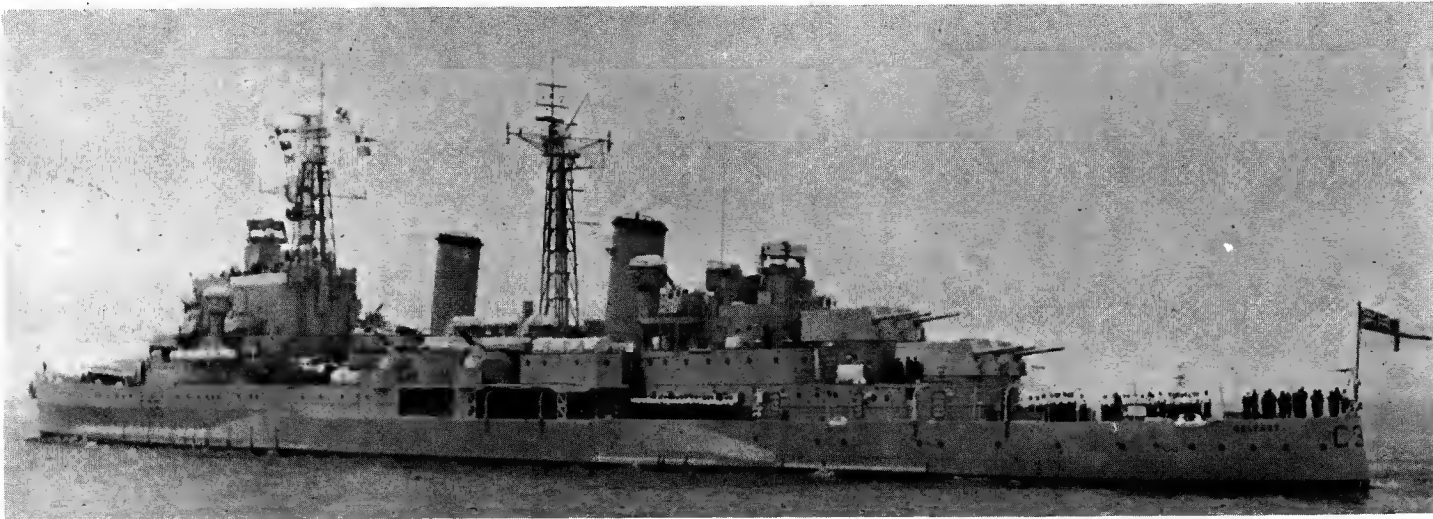
CLASS. Sister *Edinburgh* was lost in action, 2 May 1942.

DISPOSALS OF "SOUTHAMPTON" CLASS
Glasgow and *Liverpool* were scrapped in 1958, *Newcastle* in 1959, *Birmingham* in 1960 and *Sheffield* in 1967. Sister ships *Gloucester*, *Manchester* and *Southampton* were lost during the Second World War.

DISPOSALS OF "COLONY" CLASS
Jamaica was scrapped in 1960 *Kenya* in 1962, *Bermuda* and *Mauritius* in 1965, and *Gambia* was awaiting disposal in 1967. Of this class, *Nigeria* was sold to the Indian Navy in 1954 and renamed *Mysore*. Two others, *Fiji* and *Trinidad*, were lost in action during the Second World War.

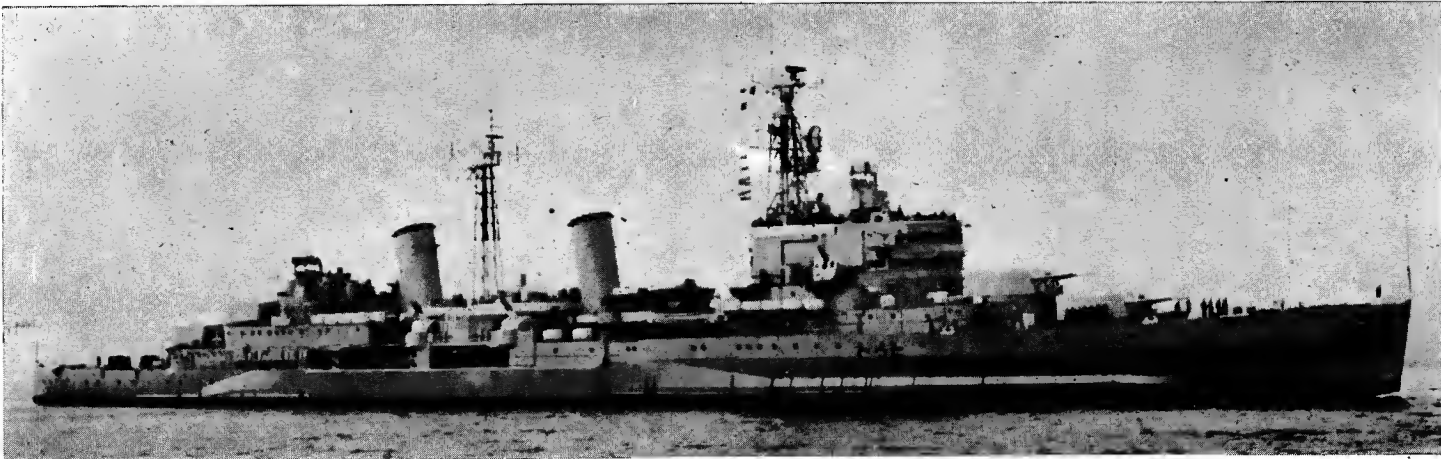
DISPOSALS OF "CEYLON" CLASS
Newfoundland was transferred to the Peruvian Navy at Portsmouth on 30 Dec 1959 and renamed *Almirante Grau*, and *Ceylon* was transferred to the Peruvian Navy at Portsmouth on 9 Feb 1960 and renamed *Coronel Bolognesi*.

DISPOSALS
Of later cruisers, *Superb* was scrapped in 1960, and *Swiftsure* in Oct 1962.



BELFAST

Wright & Logan



BELFAST

1963, Wright & Logan

GUIDED MISSILE ARMED DESTROYERS

Projected "Type 42"

REQUIREMENT. A new type of high speed vessel specifically designed to accommodate the new "Seadart" guided missile system. Smaller, cheaper, but hardly less sophisticated than the "Type 82", of which it will be a telescoped version. To be propelled by a combined steam turbine and gas turbine machinery installation. Still in the design stage.

1. New Construction "Type 82"

Displacement, tons	5 650 standard (approx) ; 6 500 to 6 750 full load
Length, feet (metres)	490 (149.4) wl; 507 (154.5) oa
Beam, feet (metres)	55 (16.8)
Draught, feet (metres)	22.5 (6.9)
Aircraft	Facilities for 1 light helicopter
Missiles, AA	1 "Seadart" GWS 30 twin launcher aft
Missiles, A/S	1 "Ikara" single launcher forward
Guns, dual purpose	1—4.5 in (115 mm) forward
Guns, AA	2—40 mm
Guns, saluting	4
A/S	1 Limbo 3-barrel DC mortar aft
Boilers	2
Main engines	Combined steam and gas turbines, 2 sets Standard Range geared steam turbines, 30 000 shp. 2 Bristol-Siddeley marine "Olympus" gas turbines, 44 600 shp. Total 74 600 shp; 2 shafts
Speed, knots	28 deep load; 32 max
Range, miles	5 000 at 18 knots
Complement	433 (27 officers plus 6 under training, 105 senior ratings and 295 junior ratings)

The design was originally intended to be an enlarged version of that of the "Leander" class general purpose frigate as a vehicle for the new "Seadart" guided weapons system, but the design turned out larger than that of the "County" class guided missile armed destroyer and has been referred to as escort cruiser.

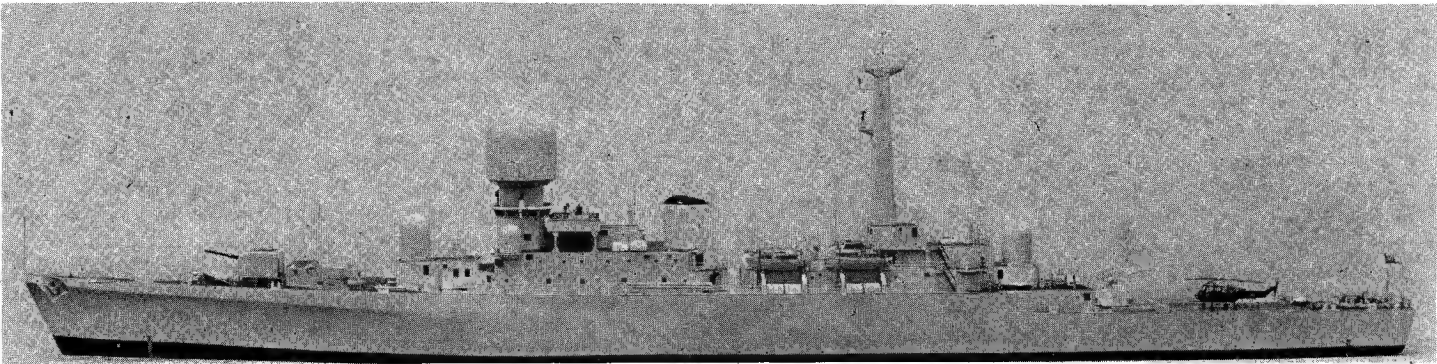
OFFICIAL STATEMENT. Type 82 ships will be slightly larger than the present "County" class guided missile destroyers, and have been designed around a powerful new weapons system. They will have a hull capable of sea-keeping and high speeds in all weathers. They will be fully stabilised to present a steady weapon platform, and will have a sleek, modern appearance. Machinery for the new destroyers will be a combination of steam and gas turbines already successfully introduced in the "County" class guided missile destroyers and in the "Tribal" class general purpose frigates, but with the new development of Bristol Siddeley marine Olympus gas turbines to provide emergency power and high speed boost. This machinery will be operated remotely from a ship control centre. The ships will have automatic steering, obviating the need for a quartermaster. In addition to the automatic steering, ships of the new class will have many other labour-saving items of equipment fitted to make the most efficient and economical use of manpower. As a result they will have a smaller ship's company for their tonnage than any other previous warship. Living conditions will be the highest obtainable in a warship, with full air-conditioning, modern electric galleys, multi-choice cafeteria messing, television and individual bunk sleeping in comfortable mess-decks. The whole ship will be capable of steaming and fighting without discomfort to its complement when shut-down against nuclear fallout. Type 82 destroyers will be fitted with an Action Data Automation Weapon System which will compute the information from the new 3D radar and other sensors, and control their various weapons to engage the targets selected. Development of this radar has been the direct result of close Anglo-Netherlands Research and Development collaboration between the two Navies. The equipment is being developed and manufactured in Holland, but will contain a number of components of British, French and Italian design and manufacture.

Type 82 ships will also be fitted with the latest Sonar system to provide the long-range information required for the Seadart and Ikara weapons. The Seadart ship missile system has been developed to meet the air threat of the 1970's and 1980's. It also has a reasonable antiship capability. Its main advantages over the Seaslug system fitted in the "County" Class guided missile destroyers are:

1. Considerably improved surface-to-air performance, particularly at very high and very low levels.
2. Quicker reaction time.
3. Considerably improved target handling capacity.
4. It is lighter and takes up less space.

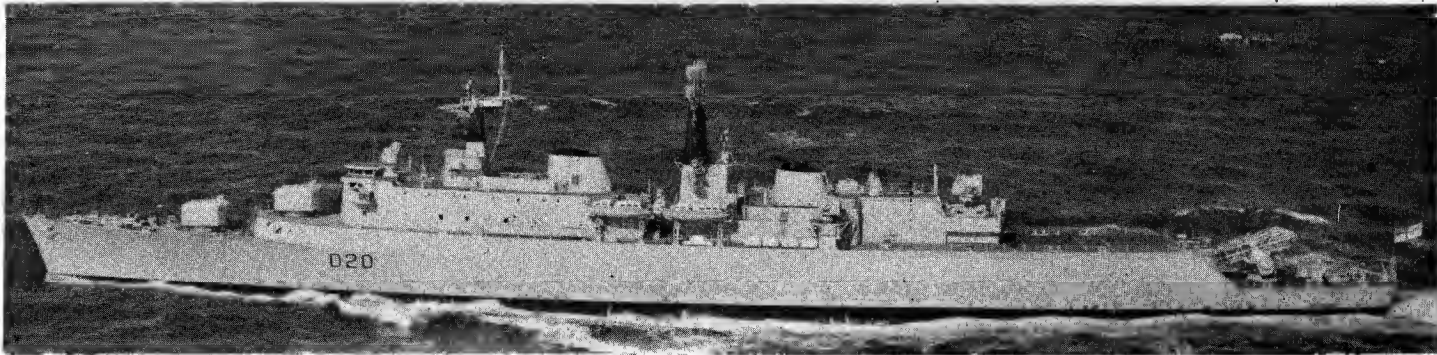
As Seadart meets a NATO military requirement and can be fitted in small ships it is hoped that foreign sales will result from the decision to go ahead with this programme. Ikara is a long-range anti-submarine weapon system developed in Australia, designed to deliver homing torpedoes to a position where they can attack submarine targets.

Ikara is propelled by a rocket motor providing the missile with its long-range capability. The air-frame, rocket motor, guidance and tracking system developed by the Australian Department of Supply in Australia, and the British-developed ADA system will be used in the RN version with a launching and handling system developed under contract in the UK. The Ikara all-weather, rapid-reaction system has considerable accuracy which will greatly enhance the submarine-killing potential of the Fleet. It is a logical development from the original Australian system so that the United Kingdom's research and development cost will be very much less than that normally associated with new guided weapon systems. The Australian Navy already have the Australian version of Ikara at sea in fleet escorts. It was officially stated on 23 Feb 1966 that Type 82 ships were expected to be ordered later that year, but only one was ordered (announced 4 Oct) from Swan Hunter Group (Wallsend) Associated Shipbuilders.



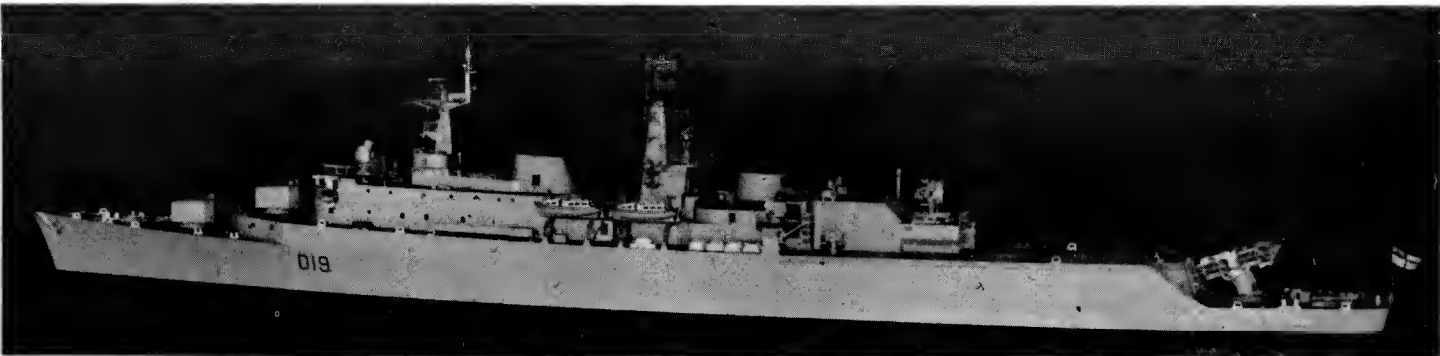
TYPE 82 GUIDED MISSILE ARMED DESTROYER

1967, Official



FIFE (with "Seaslug II" system, see next page)

1967, Official



GLAMORGAN (latest of class, see next page)

1967, Official

Guided Missile Armed Destroyers—continued

8 "County" Class

Displacement, tons	5 200 standard; 6 200 full load
Length, feet (metres)	505 (153.9) wl; 520.5 (158.7) oa
Beam, feet (metres)	54 (16.5)
Draught, feet (metres)	20 (6.1) max (props)
Aircraft	1 Westland Wessex helicopter
Missiles, AA	1 "Seaslug" twin launcher aft; 2 "Seacat" quadruple launchers abaft after funnel
Guns, dual purpose	4—4.5 in (115 mm), 2 twin turrets forward; 2—20 mm, single
Boilers	2 Babcock & Wilcox
Main engines	Combined steam and gas turbine, 2 sets geared steam turbines, 30 000 shp; 4 gas turbines, 30 000 shp. Total 60 000 shp; 2 shafts (see Engineering notes)
Speed, knots	32.5
Complement	440 (33 officers, 407 men)

Devonshire and *Hampshire*, designed to embody the newest developments in the destroyer field, were projected under the 1955-56 Navy Estimates, and it was later found possible to arm this super-destroyer type with guided weapons instead of anti-aircraft guns, and also to carry modern anti-submarine, radar and communication equipment. *Kent* and *London* were provided under the 1956-57 Navy Estimates, *Fife* and *Glamorgan* under the 1961-62 Navy Estimates, *Antrim* and *Norfolk* under the 1964-65 Navy Estimates. All fitted with stabilisers. Their endurance gives them a considerable capacity for operating independently like cruisers.

TORPEDOES. The helicopter carries a new type of homing torpedo to combat submarines.

ANTI-SUBMARINE. In addition to anti-submarine torpedoes dropped by an anti-submarine helicopter, the ships are fitted with the latest underwater detection equipment for anti-submarine work.

OPERATIONAL. Ships of this class have three main rôles:—1. Escort duties with a task group, including the ability to provide anti-aircraft defence for the group and to augment its anti-submarine capability; 2. Operations as part of a task unit of light forces with the ability to bombard in support of land forces and to attack light forces with gunfire; 3. Police duties in peace-time in any part of the world. The ships are designed to operate in "fall out" areas. As many deck installations are under cover, the ships have clean lines, facilitating "washing down" in the event of attack by nuclear weapons.

GUNNERY. The 4—4.5 inch guns are radar controlled, fully automatic dual-purpose quick-firing for attack and defence against ships and aircraft. The 20 mm guns were added for picket duties in S.E. Asia.

ENGINEERING. These are the first ships of their size to have COSAG (combined steam and gas) turbine machinery. This is of exceptionally compact and light design, enabling the amount of fighting equipment to be increased. Boilers work at a pressure of 700 psi and a temperature of 950 deg F. The steam and gas turbines are geared to the same shaft. Each shaft set consists of a high pressure and low pressure steam turbine of 15 000

Name	No.	Builders	Laid down	Launched	Completed
ANTRIM	D 18	Fairfield SB & Eng Co Ltd, Govan	20 Jan 66		
DEVONSHIRE	D 02	Cammell Laird & Co Ltd, Birkenhead	9 Mar 59	10 June 60	15 Nov 62
FIFE	D 20	Fairfield SB & Eng Co Ltd, Govan	1 June 62	9 July 64	21 June 66
GLAMORGAN	D 19	Vickers-Armstrongs Ltd, Newcastle-on-Tyne	13 Sep 62	9 July 64	11 Oct 66
HAMPSHIRE	D 06	John Brown & Co (Clydebank) Ltd, Glasgow	26 Mar 59	16 Mar 61	15 Mar 63
KENT	D 12	Harland & Wolff Ltd, Belfast	1 Mar 60	27 Sep 61	15 Aug 63
LONDON	D 16	Swan, Hunter & Wigham Richardson, Wallsend	26 Feb 60	7 Dec 61	14 Nov 63
NORFOLK	D 21	Swan, Hunter & Wigham Richardson, Wallsend	15 Mar 66		



HAMPSHIRE

1967, Wright & Logan



KENT

1967, Official

shp combined output plus two G.6 gas turbines each of 7 500 shp. The gas turbines provide a high concentration of compact power and are used to supplement the steam power for high speed work. They are also able to develop their full power from cold within a few minutes, providing unprecedented mobility, and enabling ships lying in harbour without steam to get under way instantly in emergency.

HELICOPTER. The landing space for the helicopter is at the after end of the upper deck where anti-submarine weapons would be normally mounted. The helicopter is the first to be fitted as a complete "hunter killer". It carries dipping sonar and homing torpedoes.

ELECTRICAL. There are two 1 000 kW turbo-alternators and three gas turbine alternators, total 3 750 kW, at 440 V.a.c.

RADAR. Each ship is exceptionally well equipped with the latest "watching" and "warning" radar.

HABITABILITY. All vessels have the latest accommodation standards and are fully air-conditioned.

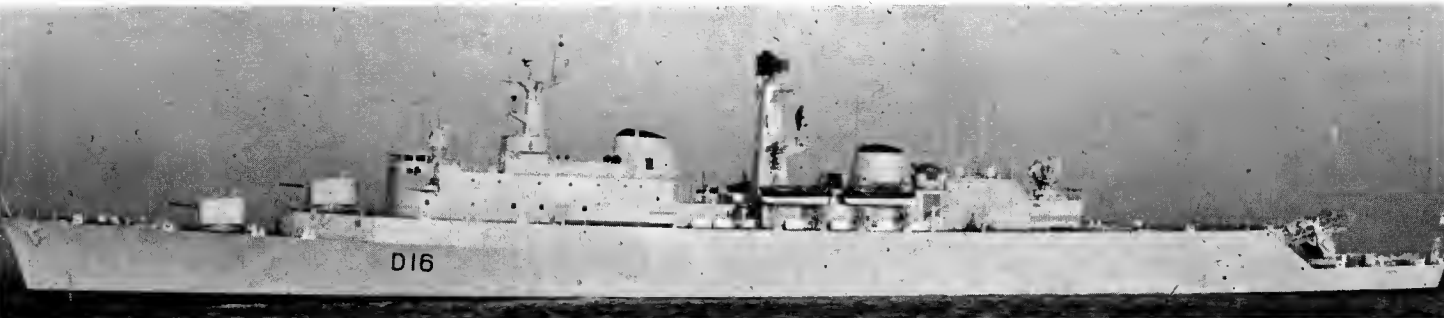
PHOTOGRAPHS. Views of *Devonshire* firing a "Seaslug" guided missile appear in the 1962-63 to 1964-65 editions, and of *Hampshire*, *Kent* and *London* in the 1964-65 to 1966-67 editions.

APPEARANCE. *Devonshire* and *Hampshire* are practically identical. *Kent* and *London* differ in some features, notably in the aftermast being stepped further aft. *Fife* and *Glamorgan* differ from the first two pairs. These and two later ships, *Antrim* and *Norfolk*, were designed to carry the more powerful "Seaslug II" system, later to be fitted to the first four.



DEVONSHIRE

1967, courtesy Godfrey H. Walker, Esq



LONDON

1967, Official

DESTROYERS

8 "Daring" Class

Displacement, tons	2 800 standard; 3 600 full load
Length, feet (metres)	366 (111.7) pp; 375 (114.3) wl; 390 (118.9) oa
Beam, feet (metres)	43 (13.1)
Draught, feet (metres)	18 (5.5) max
Guns, surface	6—4.5 in (115 mm), 2 twin fwd, 1 twin aft, Mk VI
Guns, AA	6—40 mm Mk V, 3 twin in <i>Dainty</i> , <i>Daring</i> , <i>Defender</i> , <i>Delight</i> ; 2—40 mm singles in remainder
A/S	1 Squid 3-barrelled DC mortar
Torpedo tubes	<i>Decoy</i> , <i>Diamond</i> , <i>Diana</i> , <i>Duchess</i> : 5—21 in (533 mm) in pentad mount
Boilers	2 Babcock & Wilcox in <i>Daring</i> , <i>Decoy</i> , <i>Delight</i> and <i>Diana</i> . 2 Foster Wheeler in remainder. Pressure 650 psi (45.7 kg/cm ²); Superheat 850°F (454°C)
Main engines	Parsons d.r. geared turbines; EE design in <i>Decoy</i> , <i>Diana</i> 54 000 shp; 2 shafts
Speed, knots	34.75 designed; 31.5 deep
Radius, miles	1 700 at full power 4 400 at 20 knots
Oil fuel (tons)	580
Complement	297 (12 officers, 285 ratings)

These destroyers perform a number of rôles including cruiser reconnaissance, and anti-submarine or anti-ship patrol. All fitted as leaders. They were the largest destroyers ever built for the Royal Navy. Of all-welded hull construction. An ingenious and comprehensive light warship class. Habitability and accommodation of high standard. Improved anti-aircraft and anti-submarine systems. Cost. £2 047 000 to £2 880 000 each.

GUIDED MISSILES. *Decoy* was temporarily fitted with "Seacat" aft. *Diamond*, *Diana* and *Duchess* were to have been similarly fitted but in 1963 it was decided that none of the "Daring" class would carry "Seacat".

GUNNERY. The 4.5 inch turrets are fully automatic, radar controlled. In 1959 *Decoy* had her after twin 40 mm removed and replaced by a deckhouse support for "Seacat".

TORPEDO TUBES. Originally mounted ten 21 inch torpedo tubes, but the after bank of five tubes was removed in 1958-59 and replaced by a deckhouse for extra mess accommodation, and the forward pentad mounting was suppressed in *Dainty*, *Daring*, *Defender* and *Delight* in 1963-64.

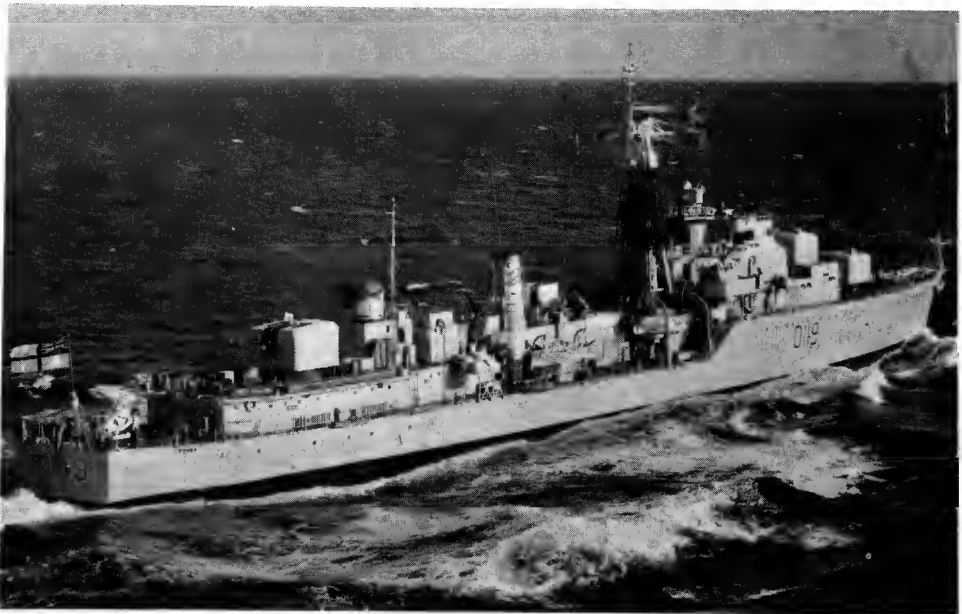
ENGINEERING. The propelling machinery was of advanced design developed by PAMETRADA (Parsons and Marine Engineering Turbine Research and Development Association) and manufactured by Wallsend Slipway & Engineering Co Ltd, in *Daring*, and by the builders in the others. Steam conditions were the highest used in ships of the Royal Navy, the boilers being designed for superheat control. Propellers 300 rpm 12 ft diameter.

ELECTRICAL. All-electric galleys, laundry and fluorescent lighting. *Decoy*, *Diamond*, *Diana* and *Duchess* differed from previous ships in that they had alternating current, operating at 440 volts, 3-phase, 60-cycles per second. *Dainty*, *Daring*, *Defender* and *Delight* have direct current at 220 volts.

APPEARANCE. *Duchess* has deckhouse abaft after funnel. In *Decoy* the deckhouse replacing the after tubes was built out with a platform reaching the ship's sides, supported by light stanchions, for "Seacat" support.

Name	No.	Builders	Laid down	Launched	Completed
DAINTY	D 108	J. Samuel White & Co Ltd, Cowes	17 Dec 45	16 Aug 50	26 Feb 53
DARING	D 05	Swan, Hunter & Wigham Richardson	29 Sep 45	10 Aug 49	8 Mar 52
DECOY	D 106	Yarrow & Co Ltd, Scotstoun	22 Sep 46	29 Mar 49	28 Apr 53
DEFENDER	D 114	Alex Stephen & Sons Ltd, Govan	22 Mar 49	27 July 50	5 Dec 52
DELIGHT	D 119	Fairfield SB & Eng Co Ltd, Govan	5 Sep 46	21 Dec 50	9 Oct 53
DIAMOND	D 35	John Brown & Co Ltd, Clydebank	15 Mar 49	14 June 50	21 Feb 52
DIANA	D 126	Yarrow & Co Ltd, Scotstoun	3 Apr 47	8 May 52	29 Mar 54
DUCHESS	D 154	John I. Thornycroft & Co Ltd, Woolston	2 July 48	9 Apr 51	23 Oct 52

(*Duchess* is lent to the Royal Australian Navy, see page 14)



DELIGHT

1967, Official



DECOY

1967, Wright & Logan

NOMENCLATURE. The following four ships were originally allocated other names.—*Decoy* (ex-*Dragon*), *Defender* (ex-*Dogstar*), *Delight* (ex-*Disdain*, ex-*Ypres*) and *Diana* (ex-*Druid*).

CLASS. Eight other units of this class ordered under the Second World War Construction Programme but cancelled after the cessation of hostilities were *Danae*, original *Decoy*, original *Delight*, *Demon* *Dervish*, *Desire*, *Desperate* and *Doughty*.

MODERNISATION. *Dainty*, *Daring*, *Defender* and *Delight* underwent long refit in 1963-64. Torpedo tubes removed.

PHOTOGRAPHS. A photograph of *Defender* appears in the 1959-60 edition, of *Diana* (with ten tubes) in the 1960-61 edition, of *Decoy* fitted with "Seacat" in the 1962-63 and 1963-64 editions, of *Diamond* and *Diana* in the 1964-65 to 1966-67 editions, and of *Dainty* in the 1965-66 and 1966-67 editions.



DARING

1967, Official

Destroyers—continued

Fleet Radar Pickets
4 Later "Battle" Class

Displacement, tons	2 780 standard; 3 430 full load
Length, feet (metres)	355 (108·2) pp; 364 (110·9) wl 379 (115·5) oa
Beam, feet (metres)	40·5 (12·3)
Draught, feet (metres)	17·5 (5·3) max (props)
Missiles, AA	"Seacat" quadruple launcher aft
Guns, dual purpose	4—4·5 in (115 mm) 2 twin forward
A/S	1 Squid 3-barrelled DC mortar
Boilers	2 Admiralty 3 drum type Pressure 400 psi (28·1 kg/cm ²) Temperature 650°F (343°C)
Main engines	Parsons geared turbines 50 000 shp; 2 shafts
Speed, knots	35·75 designed; 30·5 sea speed
Radius, miles	1 300 at full power 3 000 at 20 knots 4 400 at 12 knots
Oil fuel (tons)	680
Complement	268 (12 officers, 256 ratings)

Apart from heavier main armament this class embodied improvements on earlier destroyers. Before conversion they mounted ten 21-inch torpedo tubes in two quintuple banks on the centre line abaft the funnel, and *Agincourt* and *Corunna* were fitted as Leaders.

GUNNERY. Before reconstruction these ships mounted eight 40 mm anti-aircraft guns in four twin mountings.

CONVERSION. Known as "Battle class AD Conversions" (aircraft direction destroyers). Little remains of the original destroyers except hull, engines and boilers. Internally the ships were completely rebuilt to give a higher standard of living and fighting efficiency. The operations room is one of the most complex and compact ever contrived in destroyers. All four ships completed conversion in Jan to May 1962.

ENGINEERING. Two three-bladed propellers, 11·5 ft. diameter, 320 rpm.

GUIDED MISSILES. During conversion a guided weapons system was fitted to mount the "Seacat" launcher on the after superstructure, which, with the complex radar and gunnery systems, needs alternating current generators (the ships normally use direct current).

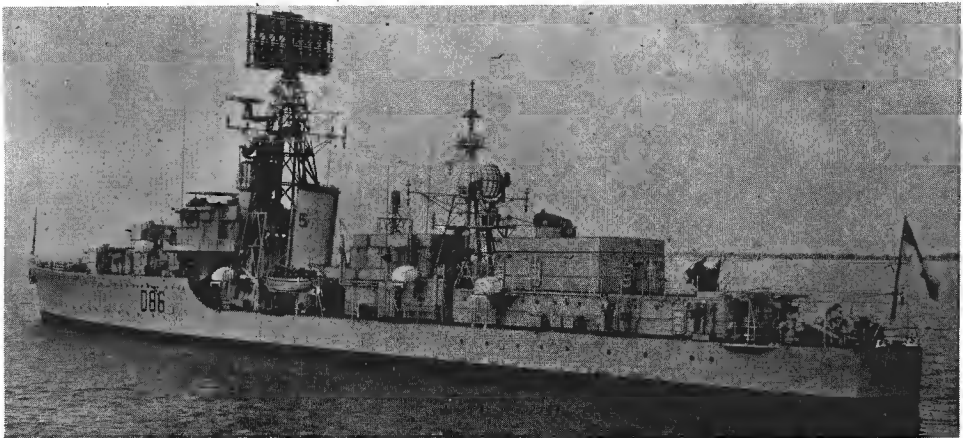
RADAR. Fitted with a beam to beam lattice foremast straddling the ship, similar to an electric grid tower, for the 293 type radar on its platform and five more aerials. The ships also have a mainmast carrying 27 aerials. Most prominent feature is the 965 radar, described as a double bedstead, twice the size of the normal air warning radar scanner.

Name	No.	Builders	Laid down	Launched	Completed
AGINCOURT	D 86	R. & W. Hawthorn Leslie, Hebburn	12 Dec 1943	29 Jan 1945	25 June 1947
AISNE	D 22	Vickers-Armstrongs Ltd, Newcastle	26 Aug 1943	12 May 1945	20 Mar 1947
BARROSA	D 68	John Brown & Co Ltd, Clydebank	28 Dec 1943	17 Jan 1945	14 Feb 1947
CORUNNA	D 97	Swan, Hunter & Wigham Richardson	12 Apr 1944	29 May 1945	6 June 1947



BARROSA

1967, Wright & Logan



AGINCOURT

1967, Official

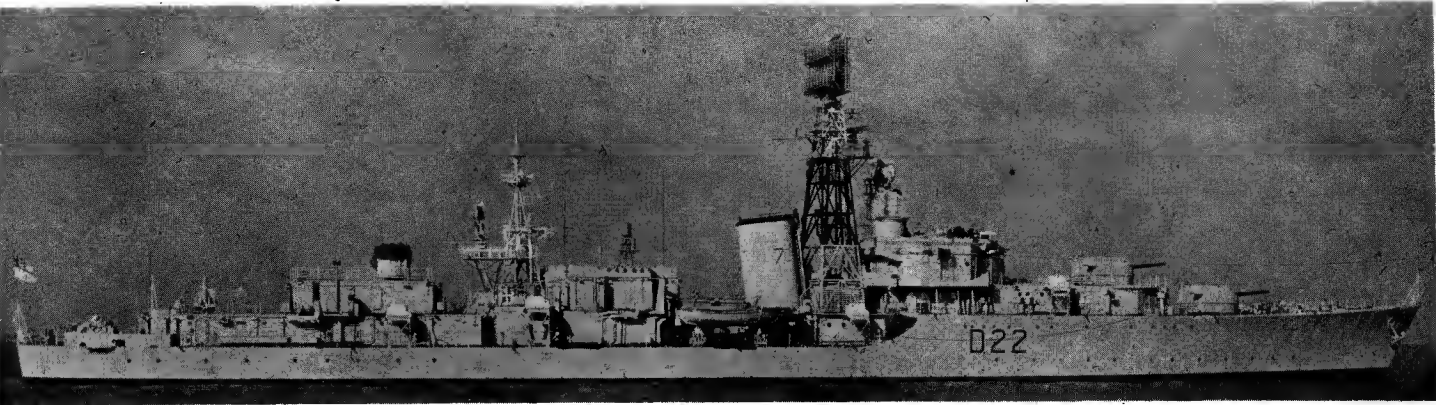
DISPOSALS OF LATER "BATTLE" CLASS
Alamein, *Dunkirk* and *Jutland* were scrapped in 1965. **MATAPAN** (see particulars in 1961-62 edition) laid up in reserve, was scheduled to be converted into Trials ship.

DISPOSALS OF "WEAPON" CLASS. Radar Picket Destroyers. *Battleaxe* scrapped in 1964, *Scorpion* in 1966. *Broadswold* on scrap list in 1967. *Crossbow* used as harbour training ship in 1967 (see particulars in 1965-66 edition).



CORUNNA

1967, Skyfotos



AISNE

1967, Official

Destroyers—continued

4 "Ca" Class

Name	No.	Builders	Laid down	Launched	Completed
CAMBRIAN	D 85	Scotts' SB & Eng Co, Greenock	14 Aug 1942	10 Dec 1943	17 July 1944
CAPRICE	D 01	Yarrow & Co Ltd, Scotstoun	28 Sep 1942	16 Sep 1943	5 Apr 1944
CARYSFORT	D 25	J. Samuel White & Co Ltd, Cowes	12 May 1943	25 July 1944	20 Feb 1945
CAVALIER	D 73	J. Samuel White & Co Ltd, Cowes	28 Feb 1943	7 Apr 1944	22 Nov 1944

Displacement, tons 2 106 standard; 2 749 full load
Length, feet (metres) 339·5 (103·5) pp; 350 (106·7) wl;
362·8 (110·6) oa
Beam, feet (metres) 35·7 (10·9)
Draught, feet (metres) 17 (5·2) max (props)
Missiles, AA "Seacat" in *Caprice*, *Cavalier*
Guns, dual purpose 3—4·5 (115 mm)
Guns, AA 4—40 mm
A/S 2 Squid triple-barrelled DC mortars
in "X" position
Torpedo tubes 4—21 in (533 mm) quadrupled;
Removed in *Cambrian*, *Carysfort*
Boilers 2 Admiralty 3 drum
Pressure 300 psi (211 kg/cm²)
Temperature 640°F (338°C)
Main engines Parsons geared turbines
40 000 shp; 2 shafts
Speed, knots 36·75 designed; 31·25 sea speed
Radius, miles 1 300 at full power
2 800 at 20 knots
Oil fuel (tons) 580
Complement 186 (10 officers, 176 ratings)

The "C" group of destroyers were built as 4 flotillas, ie: "Caesar", "Chequers", "Cossack" and "Crescent" classes.

RECONSTRUCTION. Extensively refitted and modernised, with superstructure extended aft and modified bridge. *Carysfort* and *Cavalier* have different bridges from *Cambrian* and *Caprice* which have "Leopard" type.

GUNNERY. Former armament was 4—4·5 inch and 6—40 mm guns (also 8—21 inch torpedo tubes). The 4·5 inch gun in "X" position was removed.

NOMENCLATURE. Originally allocated other names:—*Cambrian* (ex-*Spittfire*), *Caprice* (ex-*Swallow*).

TRANSFERS. Of the "Cr" class, *Crescent* and *Crusader* were transferred to the Royal Canadian Navy in 1945, *Cromwell*, *Crown*, *Croziers* and *Crystal* were sold to Norway in 1946, and *Creole* and *Crispin* were sold to Pakistan in 1956. Of the "Ch" class, *Chivalrous* was transferred to Pakistan in 1953 and *Charity* in 1958.

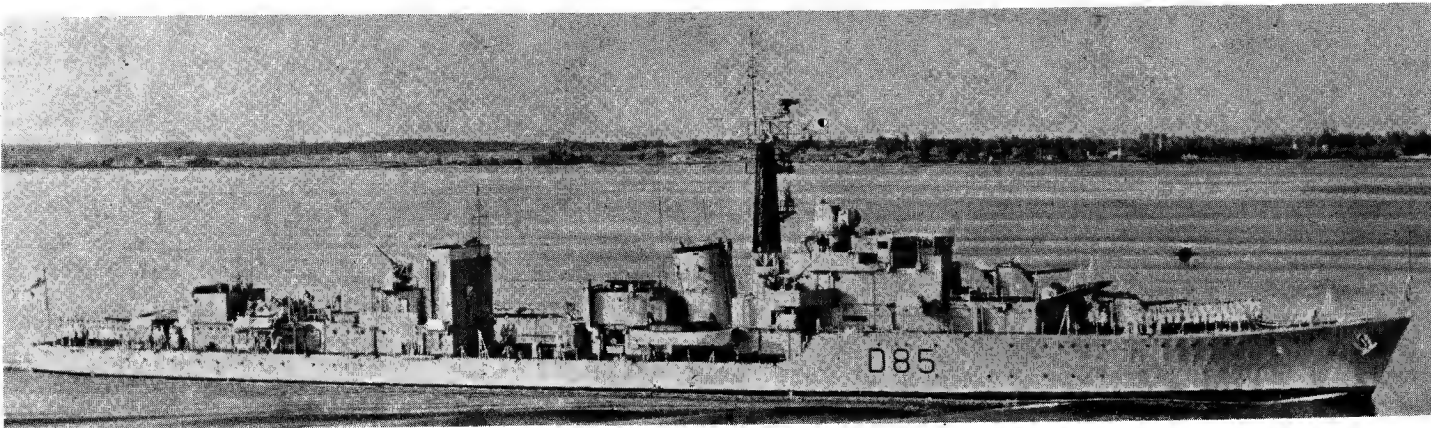
DISPOSALS
Of the "Ca" class, *Caesar*, *Carron*, *Cassandra* and *Cavendish* were scrapped in 1967. For disposals of "Ch", "Co" and "Cr" classes, early "Battle" class, and older destroyers, see 1966-67 edition.



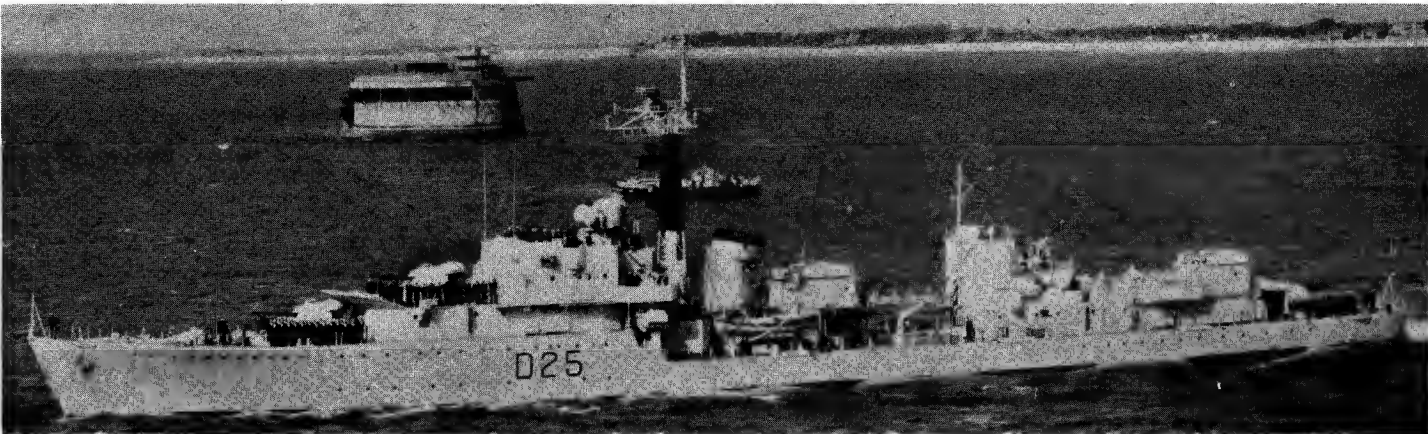
CAVALIER ("Seacat" on after superstructure) 1967, Wright & Logan



CAPRICE ("Seacat" on after superstructure) 1966, Official



CAMBRIAN 1966, Official



CARYSFORT 1966, Skyfotos

GENERAL PURPOSE FRIGATES (A/S)

"Leander" Class, Improved Type 12
19 + 5 New Construction
1st Rate (Anti-Submarine Versatile Type)

Displacement, tons	2 450 standard; 2 800 full load
Length, feet (metres)	360 (109.7) wl, 372 (113.4) oa
Beam, feet (metres)	41/43 (12.5/13.1) see Design
Draught, feet (metres)	18 (5.5) max (props)
Aircraft	1 Wasp helicopter armed with homing torpedoes
Missiles, AA	"Seacat" quadruple launcher in <i>Naiad</i> and later ships (see notes)
Guns, dual purpose	2—4.5 in (115 mm), twin
Guns, AA	2—40 mm, single; 2—20 mm, single in "Seacat" ships
A/S	1 Limbo 3-barrelled DC mortar
Boilers	2
Main engines	2 d.r. geared turbines 30 000 shp; 2 shafts
Speed, knots	30
Complement	263 (17 officers, 246 ratings)

This class exploits the good qualities of the successful "Whitby" class anti-submarine frigates in a more versatile improved Type 12. The main new features are a long-range air warning radar, the "Seacat" anti-aircraft guided missile, improved anti-submarine detection equipment and a lightweight helicopter armed with homing torpedoes. Air conditioning and better living conditions were also provided in this mainly anti-submarine but flexible and all-purpose type. Seven ships were initially provided for, three more ordered under the 1961-62 Navy Estimates, three in 1962-63 programme, three 1963-64 programme, three 1964-65 programme, three 1965-66 programme, two 1966-67 programme.

GUIDED WEAPONS. *Naiad* was the first of the class to be completed with "Seacat", followed by *Arethusa*, *Cleopatra*, *Danae*, *Juno*, *Minerva*, *Phoebe* and *Sirius*. The 40 mm guns mounted in the earlier ships will be replaced by "Seacat".

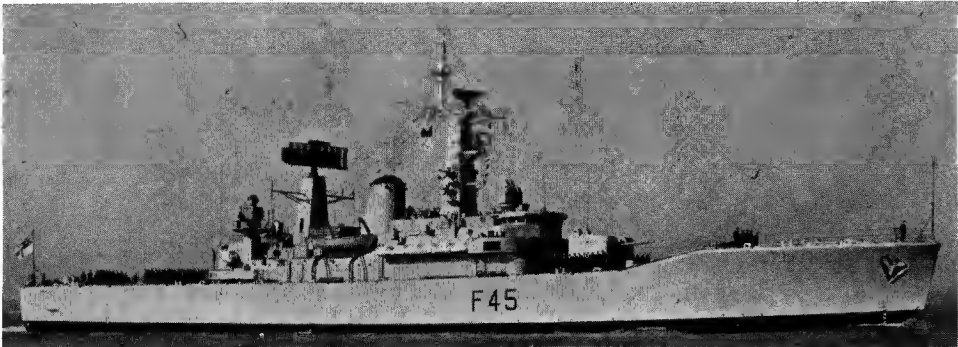
DESIGN. This class have hull and machinery similar to "Whitby" class, but plans were revised for a composite anti-submarine, anti-aircraft and air direction rôle. They are equipped with VDS (Variable Depth Sonar). Later ships (*Hermione* onwards) have beam of 43 feet to improve stability.

ELECTRICAL. Alternating current, 440 volts, 60 cycles, 1 900 kW early vessels, 2 500 kW later vessels.

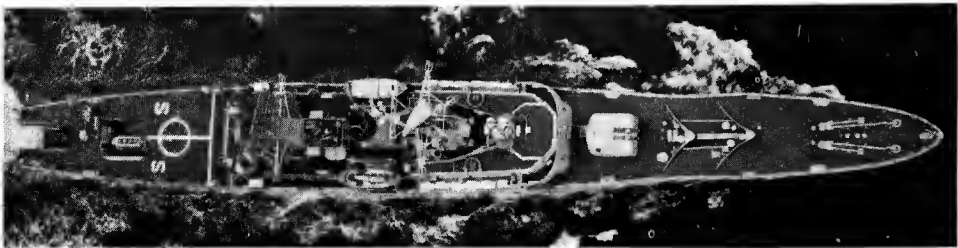
NOMENCLATURE. *Ajax*, *Dido* and *Leander* were originally to have been the last three of the "Rothesay" class, *Fowey*, *Hastings* and *Weymouth*, respectively. *Penelope* was to have been the fifth of the "Salisbury" class, *Coventry*.

PHOTOGRAPHS. Of *Leander* in the 1963-64 and 1964-65 editions, of *Ajax* and *Penelope* in the 1964-65 edition, of *Naiad* in the 1965-66 edition, of *Dido* in the 1964-65 to 1966-67 editions, of *Euryalus* and *Galatea* in the 1965-66 and 1966-67 editions.

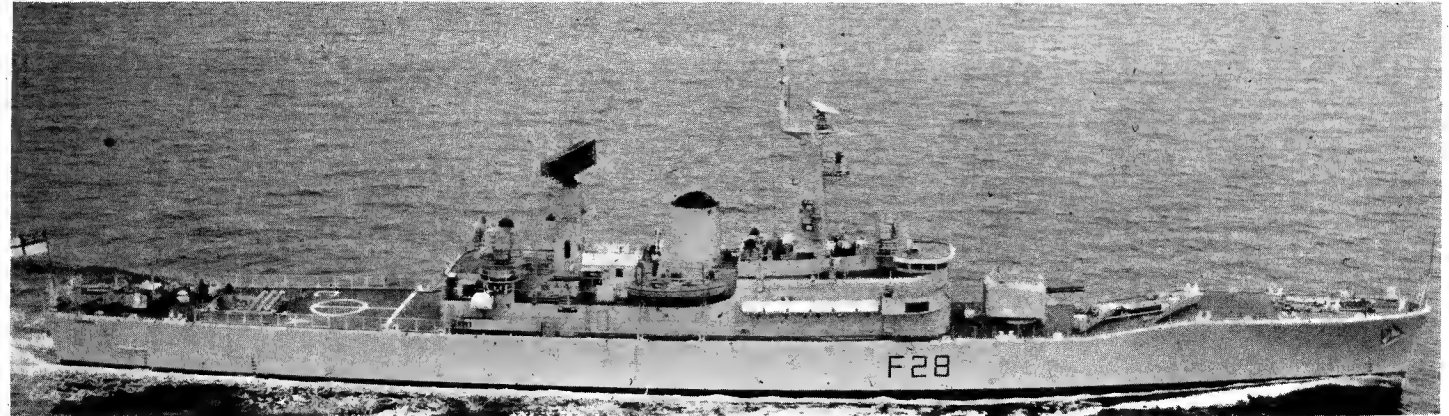
Name	No.	Builders	Laid down	Launched	Completed
AJAX	F 114	Cammell Laird & Co Ltd, Birkenhead	12 Oct 59	16 Aug 62	10 Dec 63
DIDO	F 104	Yarrow & Co Ltd, Scotstoun, Glasgow	2 Dec 59	22 Dec 61	18 Sep 63
LEANDER	F 109	Harland & Wolff Ltd, Belfast	10 Apr 59	28 June 61	27 Mar 63
PENELOPE	F 127	Vickers-Armstrongs Ltd, Tyne	14 Mar 61	17 Aug 62	31 Oct 63
AURORA	F 10	John Brown & Co (Clydebank) Ltd	1 June 61	28 Nov 62	9 Apr 64
EURYALUS	F 15	Scotts' Shipbuilding & Eng, Greenock	2 Nov 61	6 June 63	16 Sep 64
GALATEA	F 18	Swan, Hunter & Wigham Richardson, Tyne	29 Dec 61	23 May 63	25 Apr 64
ARETHUSA	F 38	J. Samuel White & Co Ltd, Cowes	7 Sep 62	5 Nov 63	24 Nov 65
NAIAD	F 39	Yarrow & Co Ltd, Scotstoun, Glasgow	30 Oct 62	4 Nov 63	15 Mar 65
CLEOPATRA	F 28	HM Dockyard, Devonport	19 June 63	25 Mar 64	4 Jan 66
SIRIUS	F 40	HM Dockyard, Portsmouth	9 Aug 63	22 Sep 64	15 June 66
MINERVA	F 45	Vickers-Armstrongs Ltd, Tyne	25 July 63	19 Dec 64	14 May 66
PHOEBE	F 42	Alex Stephen & Sons Ltd, Glasgow	3 June 63	8 July 64	15 Apr 66
DANAË	F 47	HM Dockyard, Devonport	16 Dec 64	31 Oct 65	7 Sep 67
JUNO	F 52	John I. Thornycroft Ltd, Woolston	16 July 64	24 Nov 65	18 July 67
ARGONAUT	F 56	Hawthorn Leslie, Ltd, Hebburn-on-Tyne	27 Nov 64	8 Feb 66	17 Aug 67
ANDROMEDA	F 57	HM Dockyard, Portsmouth	25 May 66	24 May 67	
JUPITER	F 60	Yarrow & Co Ltd, Scotstoun, Glasgow	3 Oct 66	4 Sep 67	
HERMIONE	F 58	Alex Stephen & Sons Ltd, Glasgow	6 Dec 65	26 Apr 67	
BACCHANTE		Vickers Ltd, High Walker, Newcastle	27 Oct 67		
SCYLLA		HM Dockyard, Devonport	17 May 67		
CHARYBDIS		Harland & Wolff Ltd, Belfast	27 Jan 67		
ACHILLES		Yarrow & Co Ltd, Scotstoun			
DIOMEDE		Yarrow & Co Ltd, Scotstoun			



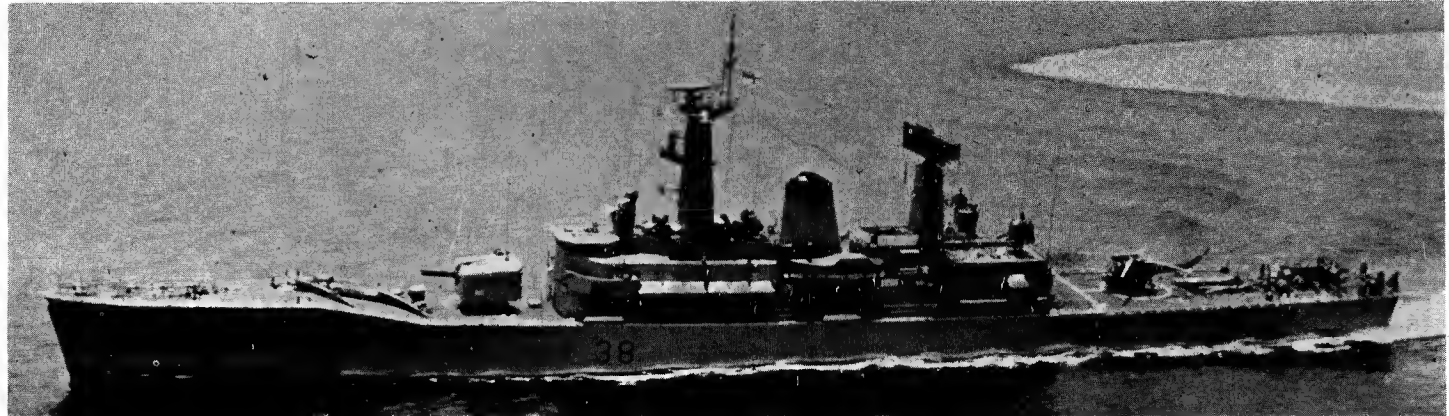
MINERVA 1967, Wright & Logan



SIRIUS 1967, Official



CLEOPATRA (with "Seacat" ship-to-air guided missile launcher) 1966, Official



ARETHUSA 1967, Official

GENERAL PURPOSE FRIGATES (Gas Turbine)

7 "Tribal" Class. Type 81

Name	No.	Builders	Laid down	Launched	Completed
ASHANTI	F 117	Yarrow & Co Ltd, Scotstoun	15 Jan 1958	9 Mar 1959	23 Nov 1961
ESKIMO	F 119	J. Samuel White & Co Ltd, Cowes	22 Oct 1958	20 Mar 1960	21 Feb 1963
GURKHA	F 122	J. I. Thornycroft & Co Ltd, Woolston	3 Nov 1958	11 July 1960	13 Feb 1963
MOHAWK	F 125	Vickers-Armstrongs Ltd, Barrow	23 Dec 1960	5 Apr 1962	29 Nov 1963
NUBIAN	F 131	HM Dockyard, Portsmouth	7 Sep 1959	6 Sep 1960	9 Oct 1962
TARTAR	F 133	HM Dockyard, Devonport	22 Oct 1959	19 Sep 1960	26 Feb 1962
ZULU	F 124	Alex Stephen & Sons Ltd, Govan	13 Dec 1960	3 July 1962	17 Apr 1964

Displacement, tons: 2 300 standard; 2 700 full load
Length, feet (metres) 350 (106·7) wl; 360 (109·7) oa
Beam, feet (metres) 42·3 (12·9)
Draught, feet (metres) 17·5 (5·3) max (props)
Aircraft 1 Westland Wasp helicopter
Missiles, AA "Seacat" quadruple launcher in Zulu
Guns, dual purpose 2—4·5 in (115 mm) single
Guns, AA 2—40 mm, single
A/S depth charges 1 Limbo 3-barrelled DC mortar,
Boilers 1 Babcock & Wilcox (plus 1 auxiliary boiler)
Main engines Combined steam and gas turbine; Metrovick steam turbine; 12 500 shp. Metrovick gas turbine; 7 500 shp; 20 000 shp; 1 shaft
Speed, knots 28
Complement 253 (13 officers, 240 ratings) .



NUBIAN

1966, Wright & Logan

Designed to fulfil economically all functions of frigates rather than for outstanding performance in any one specialised rôle, but capable of meeting the main escort functions of anti-submarine protection, anti-aircraft defence, and aircraft direction. *Ashanti*, *Eskimo* and *Gurkha* were ordered under the 1955-56 Navy Estimates. *Nubian* and *Tartar* in the 1956-57 programme, and *Mohawk* and *Zulu* 1957-58 programme. These versatile ships were designed as self-contained units for service in such areas as the Persian Gulf. They are fully air conditioned in all accommodation and most working spaces. *Ashanti* cost £5 220 000.

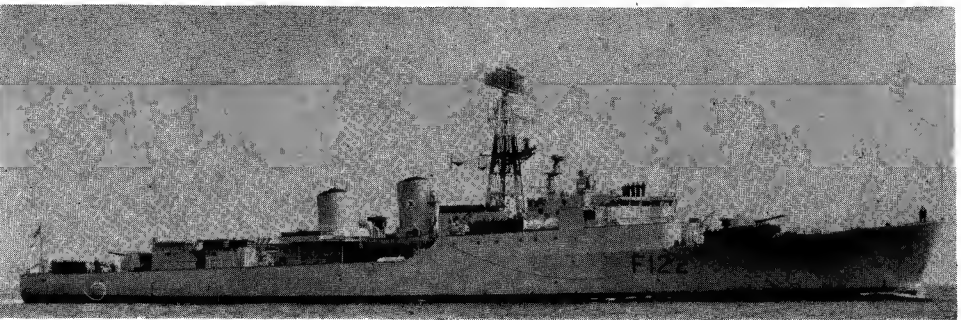
MACHINERY DESIGN. These ships have COSAG (combined steam and gas) turbine machinery. The engines are right aft. The principle employed is that of highly efficient steam turbines and gas turbines geared to the same propeller shaft. The gas turbines provide a high concentration of power in a very compact form and are used to boost the steam turbines for sustained bursts of high speed. They are also able to develop full power from cold within a few minutes, providing unprecedented mobility. The machinery installations were conceived and designed by the Yarrow-Admiralty Research Department. Metropolitan-Vickers designed and manufactured the steam turbines, gas turbines, gearing and control gear. This lightweight and compact machinery enabled more fighting equipment to be carried than with orthodox machinery. The forward funnel serves the boiler, the after one the gas turbine.

ANTI-SUBMARINE. These were the first frigates designed to carry a helicopter for anti-submarine reconnaissance.

OPERATIONAL. The ships have a totally enclosed bridge and an air-conditioned operations room. They are equipped with warning radar of the most modern design, are fitted with stabilisers, and have twin rudders.

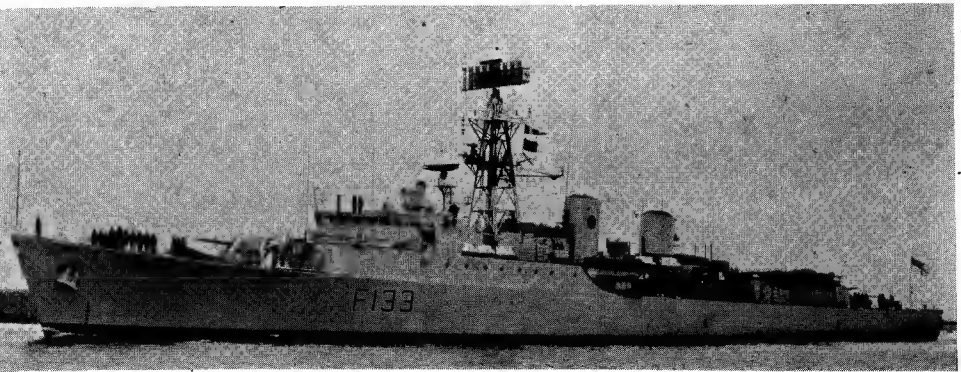
PHOTOGRAPHS. Three photographs of the prototype *Ashanti* appear in the 1962-63 edition, and a view with helicopter on board in the 1963-64 and 1964-65 editions, of *Mohawk* in the 1964-65 and 1965-66 editions, of *Zulu* in the 1964-65 to 1966-67 editions, and of *Eskimo* in the 1965-66 and 1966-67 editions.

ENGINEERING. The steam turbine provides power for normal cruising and manoeuvring. The gas turbine driving on to the same propeller shaft provides additional power for high speed. This gas turbine also enables the ship lying in harbour without steam up to get under way instantly in emergency. The machinery is remotely controlled at all powers. The main boiler works at a pressure of 550 psi and a temperature of 850 deg F. Five-bladed propeller, 11·75 ft diameter, 280 rpm.



GURKHA

1967, Wright & Logan



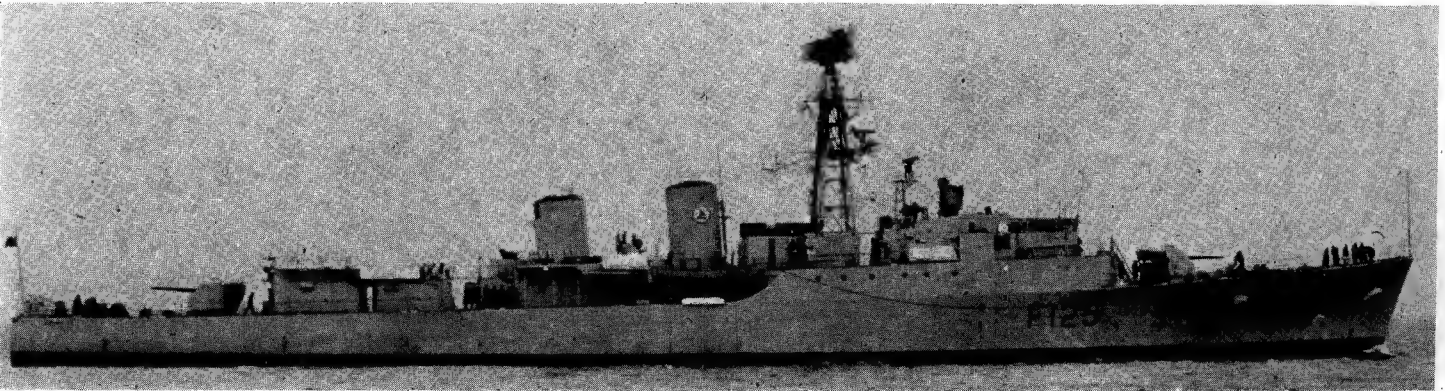
TARTAR

1967, Wright & Logan

ELECTRICAL. The ship's generator capacity of 1 500 kW will meet high demands. Fluorescent lighting is used for all living accommodation.

HABITABILITY. A high standard of living accommodation is incorporated. All manned compartments are air-conditioned.

CONSTRUCTION. Ships are of all-welded prefabricated construction. The structural arrangements were designed to provide a robust hull with special emphasis on prevention of corrosion. Denny Brown stabilisers are fitted to reduce rolling in heavy seas. Good seakeeping qualities enable ships to maintain high speed in rough weather.



MOHAWK

1966, Official

ANTI-SUBMARINE FRIGATES

9 "Rothesay" Class. Modified Type 12
1st Rate (Anti-Submarine Quality Type)

Displacement, tons	2 200 standard; 2 600 full load
Length, feet (metres)	360 (109.7) wl; 370 (112.8) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	17.3 (5.3) max (props)
Guns, dual purpose	2—4.5 in (115 mm), twin
Guns, AA	1—40 mm
A/S	2 Limbo 3-barrelled DC mortars
Boilers	2 Babcock & Wilcox
Main engines	2 d.r. geared turbines
	30 000 shp; 2 shafts
Speed, knots	30
Oil fuel (tons)	400
Complement	200 (9 officers, 191 ratings)

Provided under the 1954-55 programme. Basically similar to the "Whitby" class but with modifications in layout as a result of experience gained with the earlier Type 12, see next page. There are several differences, including the single 40 mm gun and the build up of the after superstructure around the mainmast.

GUIDED MISSILE ARMAMENT. The "Rothesay" class are to be fitted with "Seacat" surface-to-air guided missiles as secondary armament in place of 40 mm close range anti-aircraft guns. A single 40 mm gun mounted as a temporary measure, will be replaced by a "Seacat" launcher and director.

CONVERSION. *Rothesay* was taken in hand at HM Dockyard, Rosyth, in May 1966 for a two-year reconstruction during which she will be equipped to operate a Wessex Wasp lightweight anti-submarine helicopter armed with homing torpedoes and fitted with "dipping" sonar. A flight deck and hangar will be built on the stern, necessitating the removal of one of her anti-submarine mortars. A "Seacat" will replace the 40 mm gun. *Yarmouth* is also undergoing conversion with a hangar aft, and all the ships of this class will be similarly converted as opportunity offers or they come in for routine extended refit, on the pattern of the very successful general purpose frigates of the "Leander" class.

NOMENCLATURE. The "Whitby" and "Rothesay" classes were named after seaside resorts and coastal towns. The ships begun as *Fowey*, *Hastings* and *Weymouth* were re-designed as units of the "Leander" class and re-named *Ajax*, *Dido* and *Leander*, respectively, see previous page.

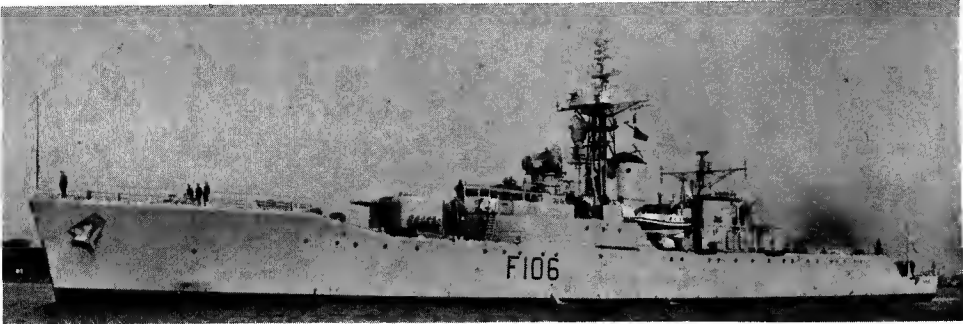
IMPROVEMENT. Although basically similar to the "Whitby" class, the opportunity was taken to incorporate in the "Rothesay" class modifications which extensive experience with the earlier ships had shown to be advantageous.

PHOTOGRAPHS. A photograph of *Rothesay* appears in the 1960-61 edition (Addenda), of *Plymouth* in the 1962-63 and 1963-64 editions, of *Rhyl* in the 1963-64 and 1964-65 editions, of *Falmouth* in the 1963-64 to 1966-67 editions, of *Londonderry* (large starboard oblique aerial view) in the 1964-65 to 1966-67 editions, and of *Yarmouth* in the 1965-66 and 1966-67 editions.

ENGINEERING. Two admiralty standard range turbines each rated at 15 000 shp. Propeller revolutions 220 rpm. Steam conditions vary, but average is 550 psi (38.7 kg/cm²) pressure and 850°F (454°C) temperature.

ELECTRICAL. Two turbo generators and two diesel generators. Total 1 140 kilowatts. Alternating current, 440 volts, three phase, 60 cycles per second.

Name	No.	Builders	Laid down	Launched	Completed
BERWICK	F 115	Harland & Wolff Ltd, Belfast	16 June 1958	15 Dec 1959	1 June 1961
BRIGHTON	F 106	Yarrow & Co Ltd, Scotstoun	23 July 1957	30 Oct 1959	28 Sep 1961
FALMOUTH	F 113	Swan Hunter, Wigham Richardson	23 Nov 1957	15 Dec 1959	25 July 1961
LONDONDERRY	F 108	J. Samuel White & Co Ltd, Cowes	15 Nov 1956	20 May 1958	22 July 1960
LOWESTOFT	F 103	Alex Stephen & Sons Ltd, Govan	9 June 1958	23 June 1960	18 Oct 1961
PLYMOUTH	F 126	HM Dockyard, Devonport	1 July 1958	20 July 1959	11 May 1961
RHYL	F 129	HM Dockyard, Portsmouth	29 Jan 1958	23 Apr 1959	31 Oct 1960
ROTHESAY	F 107	Yarrow & Co Ltd, Scotstoun	6 Nov 1956	9 Dec 1957	23 Apr 1960
YARMOUTH	F 101	John Brown & Co Ltd, Clydebank	29 Nov 1957	23 Mar 1959	26 Mar 1960



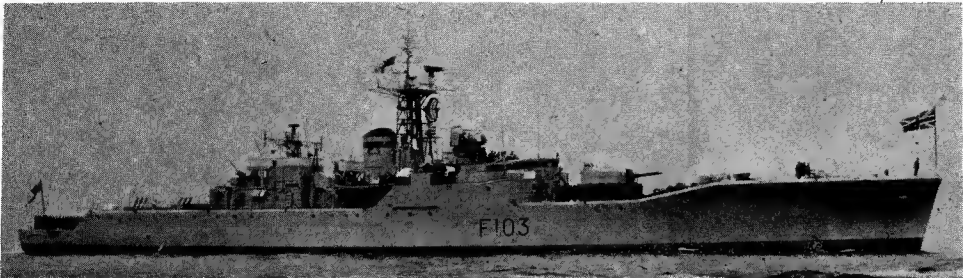
BRIGHTON

1967, Wright & Logan



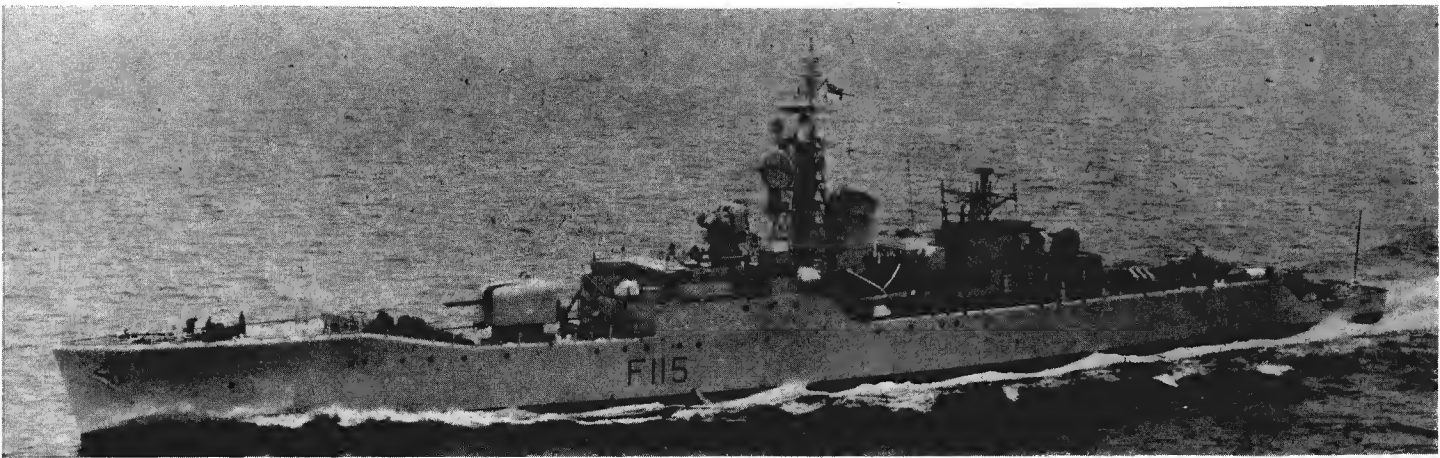
LONDONDERRY

1967, Official



LOWESTOFT

1967, Wright & Logan



BERWICK

1967, Skyfotos

Anti-Submarine Frigates—continued

6 "Whitby" Class. Type 12
1st Rate (Anti-Submarine Quality Type)

Displacement, tons	2 150 standard; 2 560 full load
Length, feet (metres)	360 (109.7) wl; 369.8 (112.7) oa
Beam, feet (metres)	41 (12.5)
Draught, feet (metres)	17 (5.2) max (props)
Guns, dual purpose	2—4.5 in (115 mm), twin
Guns, AA	2—40 mm Bofors, twin
A/S	2 Limbo 3-barrelled DC mortars
Boilers	2 Babcock & Wilcox
	Pressure 550 psi (38.7 kg/cm ²)
	Temperature 850°F (454°C)
Main engines	2 sets d.r. geared turbines
	30 430 shp; 2 shafts
Speed, knots	31 (29 sea speed)
Oil fuel (tons)	370
Complement	221 (11 officers, 210 ratings)

Ordered in 1951. Primarily designed for the location and destruction of modern submarines, these frigates were fitted with the latest underwater detection equipment and anti-submarine weapons of post-war development. Good sea-keeping qualities enable the vessels to maintain their high speed in rough seas. Their twin-rudders improve manoeuvrability. They are all welded and the structural arrangements were specially designed to achieve the lightest possible structure. The designed full load displacement was 2 440 tons.

ENGINEERING. Propelling machinery fitted included geared turbines of Y.100 design and high power. Double reduction gearing allows low propeller revolutions of 220 rpm at high power and the propeller efficiency is correspondingly high. This, coupled with improvements in hull design, enables these frigates to achieve over 30 knots on only 75 per cent of the power required by older destroyers of comparable displacement. Arrangement of the engine room machinery is outstandingly good.

ANTI-SUBMARINE WARFARE. Have modern equipment for hunting and killing submarines and facilities for directing anti-submarine aircraft.

TORPEDO MOUNTINGS. Provision was made in the design for mounting 12 A/S torpedo tubes (8 single, 2 twin), but later ships never carried them; and they were removed from earlier ships. *Scarborough* was the first to be fitted with tubes (four fixed on each side, and two swivel mountings).

ELECTRICAL. The electrical system is alternating current, 440 volts, three phase, 60 cycles per second. Two turbo alternators and two diesel alternators. Total 1 140 kilowatts.

OPERATIONAL. When completed they were considered to be the most useful class of ships of their size ever put into service. With high fo'c'sle and clean lines they ride well in a sea-way and are exceptionally dry. The enclosed bridge is spacious, with splendid vision, heated windows in the fore of the bridge being an asset in Arctic waters. Internal communications satisfied every demand placed upon them. The operations room was the finest ever put into a ship of the size.

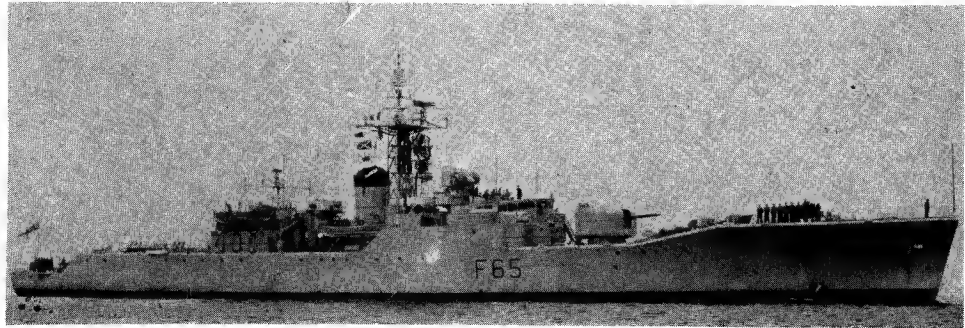
APPEARANCE. Later ships were completed with a thicker, raked back funnel with a dome cap (actually there are two stacks inside the funnel) and early ships of the class, which had a vertical funnel, were taken in hand for similar alterations as opportunities offered. *Eastbourne*, *Scarborough*, *Tenby* and *Torquay*, training ships, are now slightly different in appearance.

PHOTOGRAPHS. A photograph of *Whitby* appears in the 1957-58 edition, and photographs of *Blackpool* appear in the 1960-61 to 1962-63 editions and in the 1966-67 edition, see also New Zealand section.

Name	No.	Builders	Laid down	Launched	Completed
BLACKPOOL*	F 77	Harland & Wolff Ltd, Belfast	20 Dec 1954	14 Feb 1957	13 Aug 1958
EASTBOURNE†	F 73	Vickers-Armstrongs Ltd Tyne	13 Jan 1954	29 Dec 1955	9 Jan 1958
SCARBOROUGH	F 63	Vickers-Armstrongs Ltd, Tyne	11 Sep 1953	4 Apr 1955	10 May 1957
TENBY	F 65	Cammell Laird & Co Ltd, Birkenhead	23 June 1953	4 Oct 1955	18 Dec 1957
TORQUAY	F 43	Harland & Wolff Ltd, Belfast	11 Mar 1953	1 July 1954	10 May 1956
WHITBY	F 36	Cammell Laird & Co Ltd, Birkenhead	30 Sep 1952	2 July 1954	19 July 1956

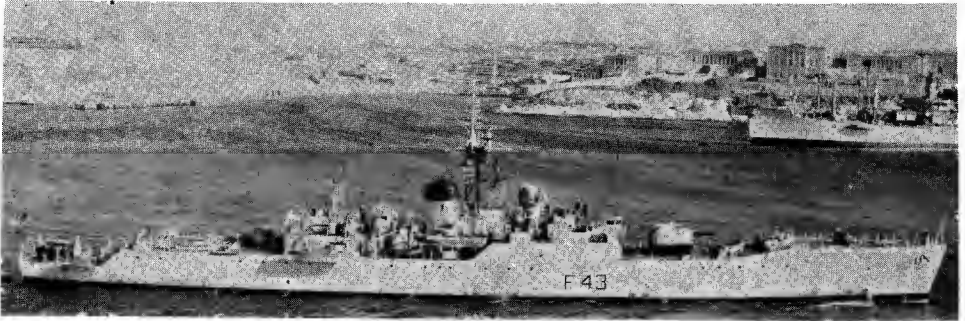
*(Blackpool is lent to the Royal New Zealand Navy, see page 198)

† Completed at Barrow



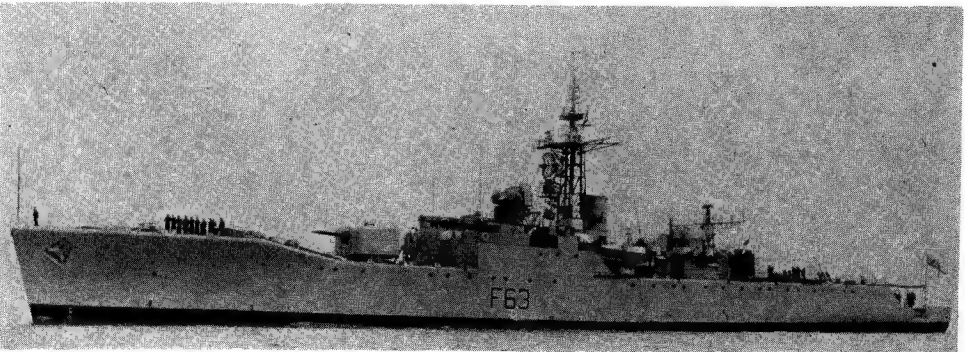
TENBY

1967, Wright & Logan



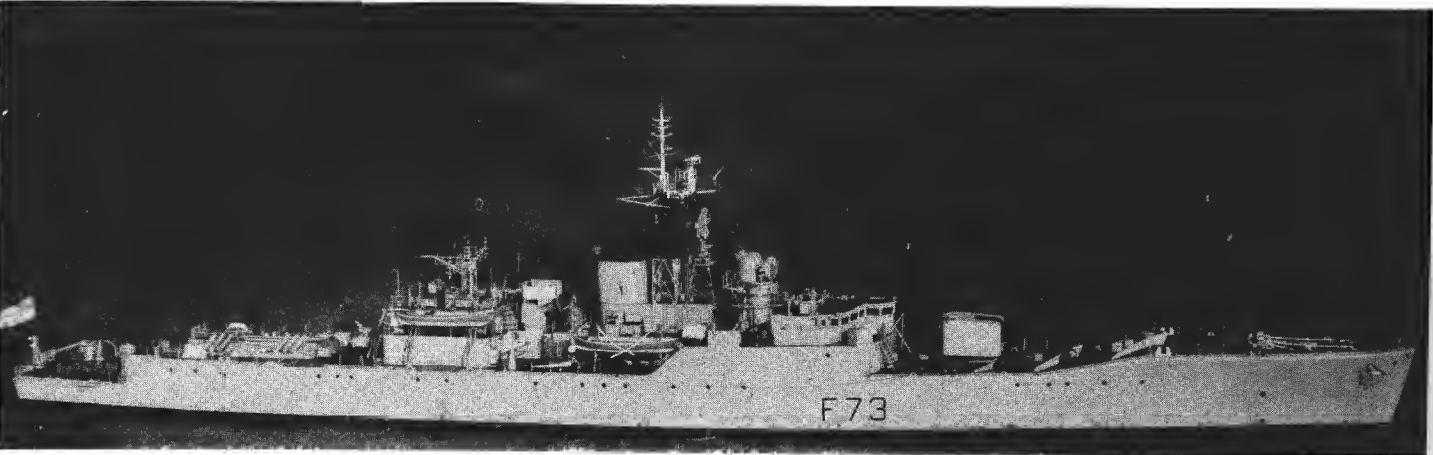
TORQUAY

1967, A. & J. Pavia



SCARBOROUGH

1967, Wright & Logan



EASTBOURNE

1967, Official

ANTI-SUBMARINE FRIGATES

4 "Leopard" Class. Type 41
(Diesel Anti-Aircraft Type)

Displacement, tons	2 300 standard; 2 520 full load
Length, feet (metres)	320 (97.5) pp; 330 (100.6) wl; 339 8 (103.6) oa
Beam, feet (metres)	40 (12.2)
Draught, feet (metres)	16 (4.9) max (props)
Guns, dual purpose	4—4.5 in (115 mm), 2 twin turrets
Guns, AA	1—40 mm
A/S	Squid 3-barrelled DC mortar
Main engines	8 Admiralty Standard Range diesels in three engine rooms; 12 380 bhp; 2 shafts
Speed, knots	25
Radius, miles	2 300 at full power 7 500 at 16 knots
Oil fuel (tons)	220
Complement	205 (10 officers, 195 ratings)

Designed primarily for the protection of convoys against aircraft, but can also serve as a medium type of destroyers in offensive operations.

CONSTRUCTION. All welded. The structural arrangements represented the latest in the development of modern technique, opportunity having been taken in their building to study the problems associated with rapid production in emergency conditions. *Jaguar*, *Lynx* and *Puma* were ordered on 28 June 1951. Fitted with stabilisers. The construction of another ship ordered under the 1956-57 Navy Estimates to have been named *Panther*, was cancelled in the 1957 defence economies.

ENGINEERING. The propelling machinery consists of Admiralty Standard Range 1 heavy oil engines coupled to the propeller shafting through hydraulic gear boxes. *Puma's* engines, of the latest Admiralty design, were manufactured by HM Dockyard, Chatham, and Polar Engines, Ltd, Glasgow, the installation being by Scotts' Shipbuilding and Engineering Co Ltd. Engines of similar design are used for driving the ship's electric generators, and these were manufactured by Peter Brotherhood & Co Ltd, Peterborough. The engines of *Lynx* were manufactured by Crossley Brothers, Manchester, and British Polar Engines, Glasgow, the installation being by John Brown & Co Ltd, and the ship's electric generators were by Vickers-Armstrongs. The engines of *Leopard* were manufactured by Vickers-Armstrongs, Ltd, Barrow, and the engines of *Jaguar* by Crossley Motors Ltd, Manchester. *Jaguar* is the only ship of class to be fitted with controllable pitch propellers, 12 ft diameter, 200 rpm.

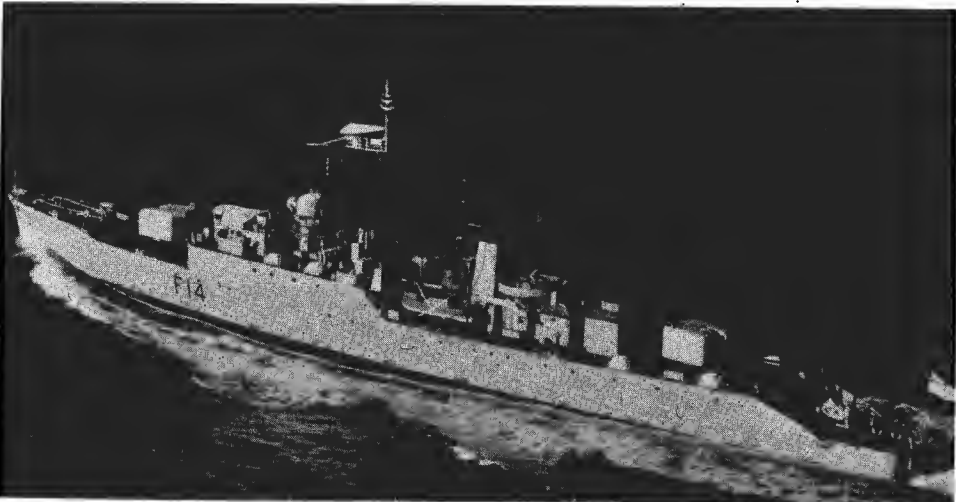
DESIGN. While a study of propulsion machinery for frigates was being made the need for new frigates of various types emerged. The accent was still on long steaming range and small ships. The anti-aircraft frigates and aircraft-direction frigates were to be two-shaft ships with 8 000 shp on each shaft. No suitable steam design was available. The Admiralty Standard Range 1 Diesel was under development and gave promise of being a good engine of low weight—about 17 lb/shp. The installation, compared with those of war-time frigates, was a great improvement, and it was therefore decided to engine these ships with four ASR 1 Engines geared to each shaft.

GUIDED MISSILE ARMAMENT. *Jaguar* is to be fitted with "Seacat" close range anti-aircraft guided missiles (see *Gunnery*).

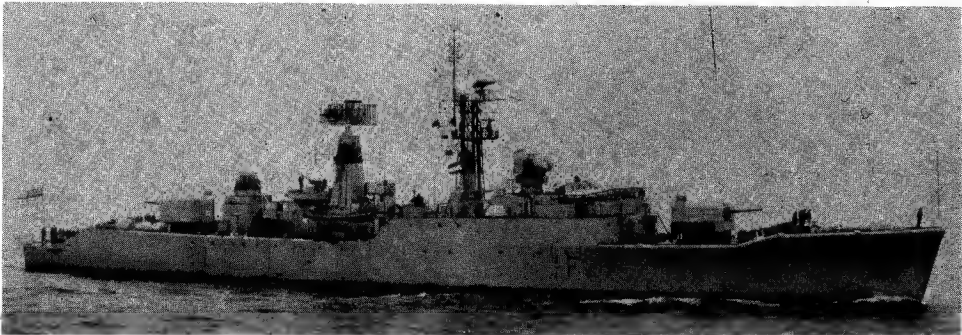
DISPLACEMENT. The original design called for a standard displacement of about 1 800 tons, but with improvements and additions incorporated during construction the ships turned out heavier (1 950 tons light displacement.)

NOMENCLATURE. All the ships of this class are named after big cats. The fifth and intended sixth ships of the class were successively to have been named *Panther* (see *Construction* notes above and *Class* notes below).

Name	No.	Builders	Laid down	Launched	Completed
JAGUAR	F 37	Wm Denny & Bros Ltd, Dumberton	2 Nov 1953	30 July 1957	12 Dec 1959
LEOPARD	F 14	H.M. Dockyard, Portsmouth	25 Mar 1953	23 May 1955	30 Sep 1958
LYNX	F 27	John Brown & Co Ltd, Clydebank	13 Aug 1953	12 Jan 1955	14 Mar 1957
PUMA	F 34	Scotts' SB & Eng Co Ltd, Greenock	16 Nov 1953	30 June 1954	24 Apr 1957



LEOPARD (main "mäck") 1966, Official



LYNX 1967, Wright & Logan

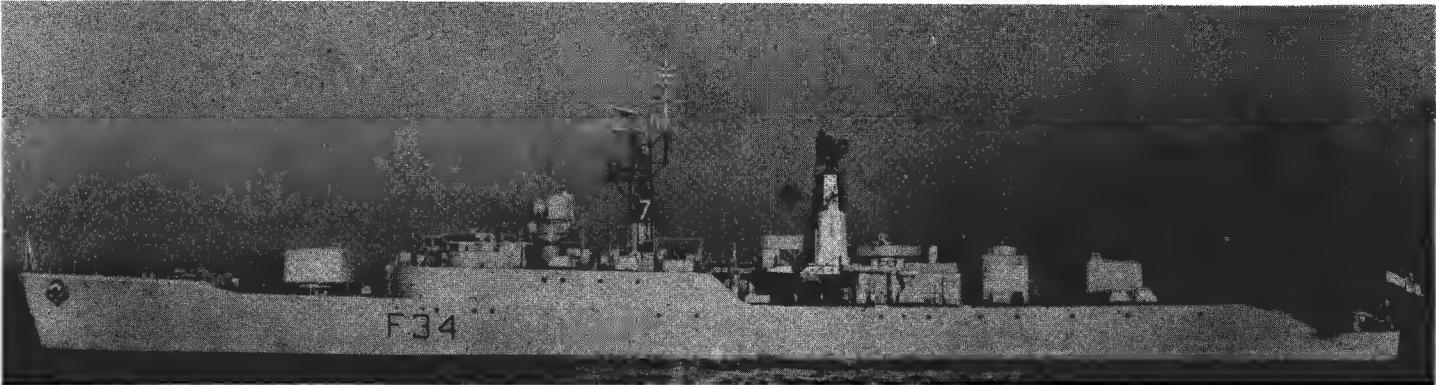
RECONSTRUCTION. *Lynx* underwent extended refit in 1963 with new main "mäck" (combined mast/stack), *Puma* was similarly refitted in 1964, and *Leopard* in Oct 1964-Feb 1966.

FUEL. The fuel tanks have a compensating system, so that sea water replaces oil fuel as it is used.

GUNNERY. The main armament of two Mk 6 twin 4.5 inch gun mountings and the gunnery armament control are similar to those mounted in the "Daring" class destroyers. The secondary armament, initially consisting of a Mk 2 twin .40 mm mounting, will eventually be replaced by "Seacat" ship-to-air guided missiles.

CLASS. A ship of this class, originally to have been named *Panther*, built by John Brown & Co Ltd, Clydebank, intended for the Royal Navy, was transferred to the Indian Navy and renamed *Brahmaputra*, see Indian section. Another *Panther* was projected to take her place, but this ship was not built as a unit of this class or under that name (see *Nomenclature* notes on following page).

PHOTOGRAPHS. A large starboard bow view of *Puma* appears in the 1959-60 edition, a starboard bow view of *Lynx* (before refit) in the 1957-58 to 1961-62 editions, a large starboard broadside view of *Jaguar* in the 1960-61 to 1962-63 editions, a port bow view of *Puma* (before refit) in the 1962-63 and 1963-64 editions, a starboard quarter oblique aerial view of *Leopard* in the 1959-60 to 1963-64 editions, a port near-broadside surface view of *Leopard* in the 1964-65 edition, a large port broadside view of *Lynx* after refit in the 1963-64 and 1964-65 editions, a starboard bow oblique aerial view of *Jaguar* at speed in the 1964-65 and 1965-66 editions, a port quarter view of *Lynx* and a starboard broadside surface view of *Puma* after refit in the 1965-66 and 1966-67 editions.



PUMA 1967, Official

12 "Blackwood" Class. Type 14
2nd Rate (Anti-Submarine Utility Type)

Displacement, tons	1 180 standard; 1 456 full load
Length, feet (metres)	300 (91·4) wl; 310 (94·5) oa
Beam, feet (metres)	33 (10·1)
Draught, feet (metres)	15·5 (4·7) max (props)
Guns, AA	2—40 mm 8ofors (see <i>Gunnery</i>)
A/S	2 Limbo 3-barrelled DC mortars
Boilers	2 8ebcook & Wilcox
	Pressure 550 psi (38·7 kg/cm ²)
	Temperature 850°F (454°C)
Main engines	1 set geared turbines
	15 000 shp; 1 shaft
Speed, knots	27·8 max; 24·5 sea speed
Radius, miles	4 000 at 12 knots
Complement	140 (8 officers, 132 ratings)

Very lightly armed, as far as guns are concerned. Designed for a mainly anti-submarine rôle. Of comparatively simple construction. Built in pre-fabricated sections. In 1958-59 their hulls were strengthened to withstand severe and prolonged sea and weather conditions on fishery protection in Icelandic waters.

ANTI-SUBMARINE WARFARE. The two Limbos can each fire with great accuracy a pattern of large depth bombs which can be set to explode at a predetermined depth. They can be trained over a wider arc than previous types of anti-submarine mortars, and have a much greater and more accurate range.

GUNNERY. The original gun armament was three 40 mm Bofors AA guns, but one has been removed.

TORPEDO ARMAMENT. 4—21 inch tubes (2 twin) mounted in *Blackwood*. *Exmouth*, *Malcolm* and *Palliser* were removed.

ENGINEERING. All engined by their builders, except *Pellw* and *Russell*, by Wallsend Slipway & Eng Co Ltd, and *Grafton* and *Malcolm* by Parsons Marine Steam Turbine Co Ltd, Wallsend-on-Tyne. The turbines were of advanced design. The propelling machinery of *Hardy* and *Keppel* includes turbines of English Electric Co design. Four-bladed, 12 ft diameter propeller, 220 rpm.

FISHERY PROTECTION SQUADRON. *Duncan* (on completion as Squadron Leader in 1958), *Malcolm* (in 1959), *Palliser* (Apr 1958) and *Russell* (Jan 1958) formed the 1st Division of the Fishery Protection Squadron.

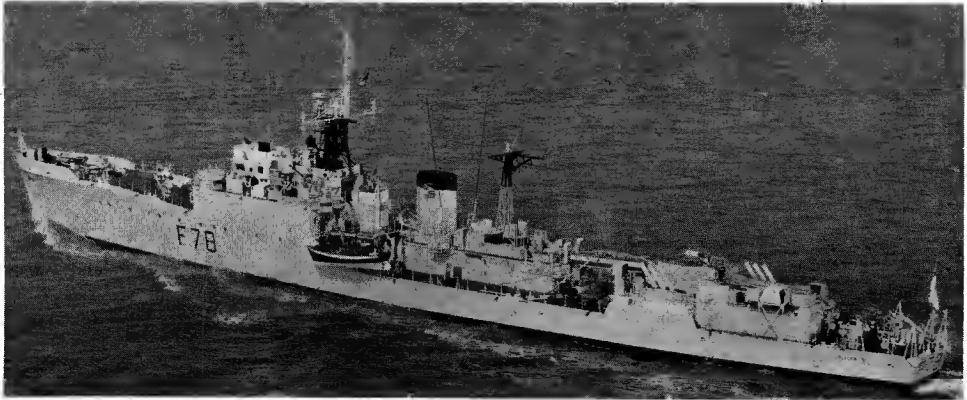
PHOTOGRAPHS. A photograph of *Keppel* appears in the 1956-57 and 1957-58 editions, of *Palliser* in the 1959-60 edition, of *Duncan* in the 1961-62 to 1963-64 editions, of *Grafton* in the 1964-65 edition, of *Russell* in the 1963-64 to 1966-67 editions, of *Exmouth* in the 1966-67 edition.

NOMENCLATURE. Named after famous Captains of British naval history.

MACHINERY CONVERSION. It was announced on 10 Feb 1966 that the Admiralty Board had approved the conversion of *Exmouth* to all-gas turbine propulsion to provide the Royal Navy with the first major warship propelled entirely by gas turbines, heralding a new era in naval marine engineering. *Exmouth* will have one 8SE Olympus for full power, with two Proteus engines for cruising. Both these engines are marine versions of well-known and proven aircraft gas turbines and their use in warships benefits from the extensive research and development already completed for aircraft use, and from which they have evolved. The Olympus, which underwent shore trials at the makers works at Ansty, near Coventry, in summer 1966, is likely to be used in any new classes of frigates and destroyers which may come into service in the early 1970's. In the meantime *Exmouth* will get the Olympus to sea as a main propulsion plant some years earlier and will enable the operational characteristics and benefits of all-gas turbine propulsion to be fully evaluated in the rigours of naval service. These benefits include significant reductions in weight and space of machinery and fuel, and in operating and maintenance staffs. Gas turbine machinery installations in *Exmouth* and probably in future ships will be operated and controlled entirely from the bridge. Other new features in *Exmouth* will be the use of a gas turbine developed by Centrax Ltd of Newton Abbot, Devon, for

Anti-Submarine Frigates—continued

Name	No.	Builders	Laid down	Launched	Completed
BLACKWOOD	F 78	John I. Thornycroft & Co, Woolston	14 Sep 1953	4 Oct 1955	22 Aug 1957
DUNCAN	F 80	John I. Thornycroft & Co, Woolston	17 Dec 1953	30 May 1957	21 Oct 1958
EXMOUTH	F 84	J. Samuel White & Co Ltd, Cowes	24 Mar 1954	16 Nov 1955	20 Dec 1957
GRAFTON	F 51	J. Samuel White & Co Ltd, Cowes	25 Feb 1953	13 Sep 1954	8 Jan 1957
HARDY	F 54	Yarrow & Co Ltd, Scotstoun	4 Feb 1953	25 Nov 1953	15 Dec 1955
KEPPEL	F 85	Yarrow & Co Ltd, Scotstoun	27 Mar 1953	31 Aug 1954	6 July 1956
MALCOLM	F 88	Yarrow & Co Ltd, Scotstoun	1 Feb 1954	18 Oct 1955	12 Dec 1957
MURRAY	F 91	Alex Stephen & Sons Ltd, Govan	30 Nov 1953	22 Feb 1955	5 June 1956
PALLISER	F 94	Alex Stephen & Sons Ltd, Govan	15 Mar 1955	10 May 1956	13 Dec 1957
PELLEW	F 62	Swan, Hunter & Wigham Richardson	5 Nov 1953	29 Sep 1954	26 July 1956
RUSSELL	F 97	Swan, Hunter & Wigham Richardson	11 Nov 1953	10 Dec 1954	7 Feb 1957



BLACKWOOD 1967, Skyfotos



HARDY 1967, A. & J. Pavia



PELLEW 1967, Skyfotos

driving the main electric generator, and this will incorporate a waste heat boiler to produce steam for auxiliary and domestic purposes. A controllable pitch propeller by Stone Manganese Marine Ltd, of Deptford, will be fitted for astern operation. Design of the new installation for *Exmouth* was carried out by the Yarrow-Admiralty Research Department in conjunction with Bristol Siddeley Engines Ltd, under the overall direction of the Ship Department of the Ministry of Defence (Navy). *Exmouth* is being converted at HM Dockyard, Chatham. The Olympus engine will develop 22 500 hp and the two Proteus engines 3 250 each = 6 500 hp but only one system or the other will propel; they cannot be used together or for boost.



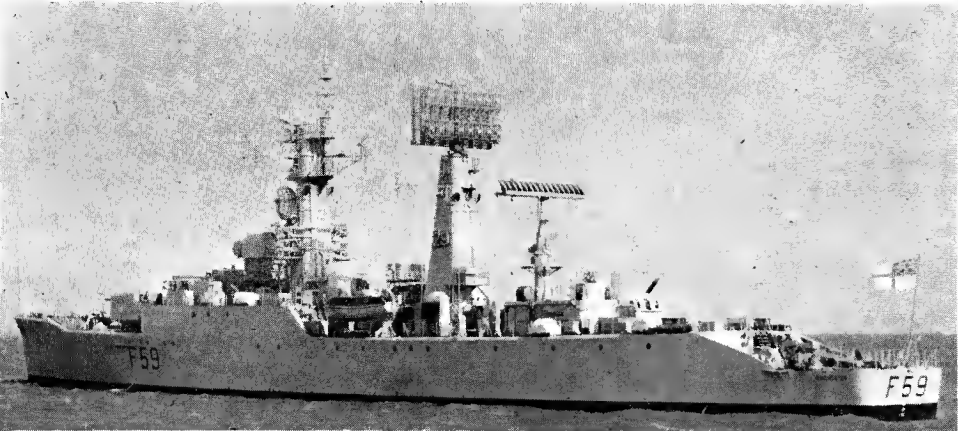
DUNDAS 1967, courtesy Godfrey H. Walker Esq

AIRCRAFT DIRECTION FRIGATES

4 "Salisbury" Class. - Type 61
(Diesel Aircraft Direction Type)

Name	No.	Builders	Laid down	Launched	Completed
CHICHESTER	F 59	Fairfield S8 & Eng Co Ltd, Govan	25 Jan 1953	21 Apr 1955	16 May 1958
LINCOLN	F 99	Fairfield S8 & Eng Co Ltd, Govan	20 May 1955	6 Apr 1959	7 July 1960
LLANDAFF	F 61	Hawthorn Leslie Ltd, Hebburn-on-Tyne	27 Aug 1953	30 Nov 1955	11 Apr 1958
SALISBURY	F 32	HM Dockyard, Devonport	23 Jan 1952	25 June 1953	27 Feb 1957

Displacement, tons	2 170 standard; 2 350 full load
Length, feet (metres)	320 (97.5) pp; 330 (100.6) wl; 339.8 (103.6) oa
Beam, feet (metres)	40 (12.2)
Draught, feet (metres)	15.5 (4.7) max (props)
Guns, dual purpose	2—4.5 in (115 mm)
Guns, AA	2—40 mm (1—40 mm in Lincoln, see Guided Missile note)
A/S	Squid triple-barrelled DC mortar
Main engines	8 Admiralty Standard Range diesels in three engine rooms; 12 380 bhp; 2 shafts
Speed, knots	25
Radius, miles	2 300 at full power 7 500 at 16 knots
Oil fuel (tons)	2 300
Complement	207 (9 officers, 198 ratings)



CHICHESTER

1967, Official

Designed primarily for the direction of carrier-borne and shore based aircraft, but can also serve as a lighter type of destroyer in offensive operations.

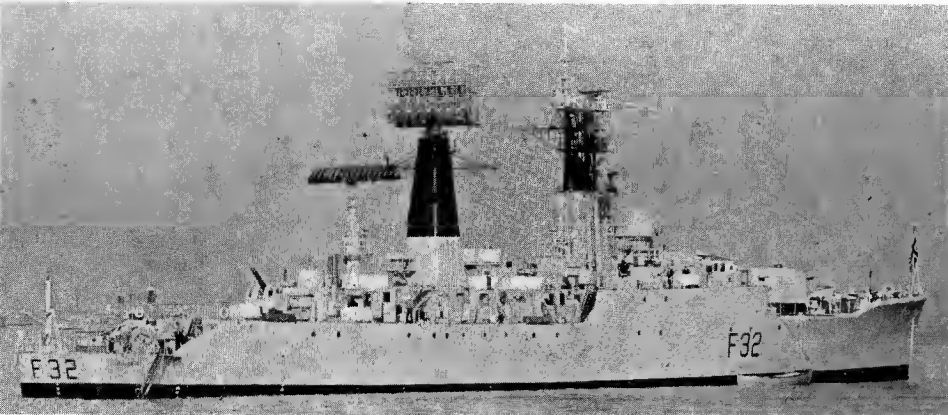
CONSTRUCTION. Ordered on 28 June 1951 except *Salisbury*, the prototype ship. Construction was all welded and the design largely prefabricated in such a manner as to allow for rapid building in emergency. The construction of the fifth ship, *Exeter*, ordered under the 1956-57 Navy Estimates, was cancelled in the 1957 defence economies. Fitted with stabilisers (except *Lincoln*).

ENGINEERING. *Salisbury* has twin screws and is powered by Admiralty Standard Range 1 heavy oil engines coupled to the propeller shafts through hydraulic couplings and oil operated reverse and reduction gear boxes. These engines designed to develop 1940 bhp at 920 rpm, were manufactured by Messrs Vickers-Armstrongs, Barrow, who also made the engines of similar design for driving the ship's four 360 kW electric generators. Other ships have four 500 kW generators. *Llandaff* has similar main engines manufactured by British Polar, of Glasgow. Engines of similar design for driving the ship's electric generators were manufactured by Vickers-Armstrongs, Barrow-in-Furness. *Llandaff* is the only Type 61 frigate to have a 500 kW gas-turbine alternator and three diesel generators. This new gas-turbine alternator was manufactured by W. H. Allen & Sons, Bedford. *Lincoln* is fitted with controllable pitch propellers, rotating at 200 rpm, which are 12 feet in diameter, manufactured by Stone Marine & Engineering Co Ltd.

GUIDED MISSILE ARMAMENT. A single 40 mm AA gun, mounted in *Lincoln*, as a temporary measure, will eventually be replaced by a "Seacat" guided missile launcher and director.

NOMENCLATURE. All ships of this class are named after cathedral cities. A fifth ship was to have been named *Exeter*. A sixth ship, to have been named *Coven-*
try, was originally ordered as *Panther* and was built as *Penelope* (see *Nomenclature* notes under "Leander" class and "Leopard" class on preceding pages). A seventh ship was to have been named *Gloucester*.

DISPLACEMENT. The originally designed light displacement was 1 738 tons, but with modifications and additions during construction the ships turned out heavier.



SALISBURY

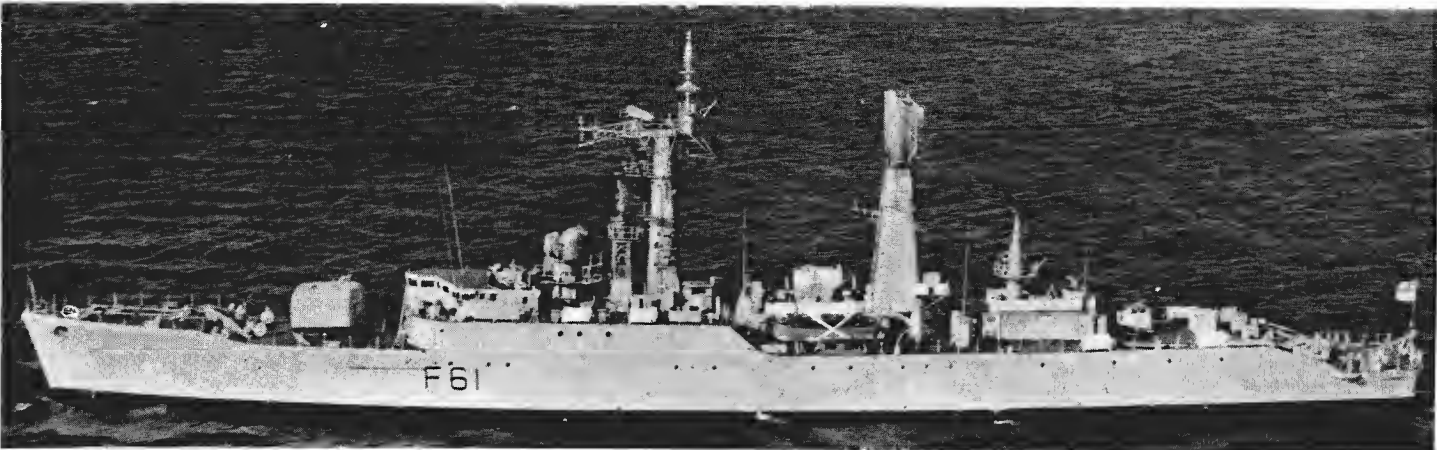
1967, courtesy Dr Giorgio Arra

RECONSTRUCTION. *Salisbury* underwent extended refit in 1962. Her after funnel and lattice mast combination was replaced by a single tall funnel with Type 985 aerial on top, reminiscent of the US combined mast and stack or "mack". *Chichester* underwent similar refit in 1964 but with both fore and main "macks". *Llandaff* completed conversion with fore and main "macks" in 1966.

FUEL. The fuel tanks have a compensating system whereby sea water replaces oil fuel as it is consumed.

RADAR. All four ships have highly developed electronic equipment, *Chichester* was fitted with a new type of radar display on the foremast and mainmast. The radar on the foremast consists of a "spoked" aerial of the "cartwheel" type (without rim).

PHOTOGRAPHS. Starboard quarter and starboard bow views of *Salisbury* (before reconstruction) appear in the 1957-58 (Diamond Jubilee) edition, starboard quarter and port bow views of *Llandaff* in the 1958-59 edition (in Addenda), a large starboard bow view of *Chichester* in the 1958-59 to 1960-61 editions, a port quarter view of *Salisbury* (before reconstruction) in the 1959-60 to 1961-62 editions, a port broadside surface view of *Llandaff* in the 1959-60 to 1962-63 editions, a starboard broadside view of *Lincoln* in the 1960-61 to 1963-64 editions, a large starboard broadside surface view of *Salisbury* after reconstruction in the 1963-64 and 1964-65 editions, a port bow surface view of *Chichester* after reconstruction in the 1964-65 edition, a starboard broadside surface view of *Llandaff* in the 1964-65 and 1965-66 editions, a starboard quarter view of *Chichester* and a port bow view of *Salisbury* in the 1965-66 and 1966-67 editions, and a part broadside aerial view of *Lincoln* in the 1966-67 edition.



LLANDAFF

1967, Official

FAST ANTI-SUBMARINE FRIGATES (ex-Destroyers)

9 "Type 15" 1st Rate
"T", "U", "V", "W", and "Z" Classes
(Fully Converted from Destroyers)

Displacement, tons	2 240 standard; 2 880 full load
Length, feet (metres)	339.5 (103.5) pp; 350 (106.7) wl; 362.8 (110.6) oa
Beam, feet (metres)	35.7 (10.9)
Draught, feet (metres)	17 (5.2)
Guns, surface	2-4 in (102 mm), twin
Guns, AA	2-40 mm, twin
A/S	Troubridge, Zest and "U" class. 2 Limbo 3-barrelled DC mortars Verulam and Wakeful. 2 Squid 3-barrelled DC mortars
Torpedo tubes	Provision for tubes. 8 (4 each side) for homing torpedoes were fitted in <i>Ulster</i>
Boilers	2 Admiralty 3 drum Pressure 300 psi (21.1 kg/cm ²) Superheat 640°F (338°C)
Main engines	Parsons geared turbines 40 000 shp; 2 shafts
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	1 300 at full power 2 800 to 3 000 at 20 knots
Oil fuel (tons)	570 to 600
Complement	195 (15 officers, 180 men)

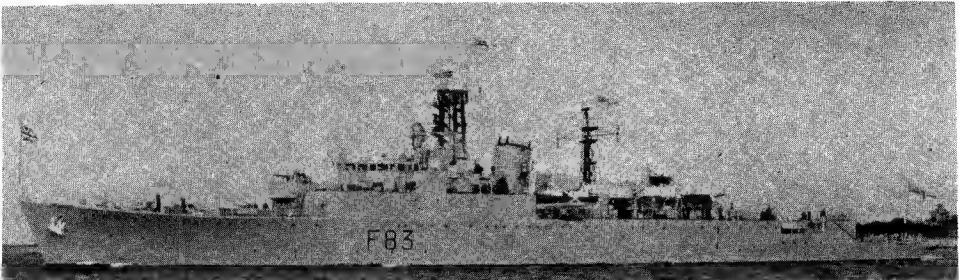
ZEST. Fully converted from a destroyer into a fast anti-submarine frigate at HM Dockyard, Chatham, in Feb 1954-56. Has her twin 40 mm mounting on the break of the forecastle. Three-bladed, 10.5 ft diameter propellers, 320 rpm.

"W" CLASS. *Wakeful*, ex-*Zebra*, converted by Scott's Shipbuilding & Engineering Co Ltd, Greenock, in 1952-53, was refitted with higher open bridge in 1959 for Portsmouth Squadron duties, her 4 inch gun mounting being removed and replaced by a deckhouse. Of the original flotilla of eight "W" class destroyers *Wessex* and *Whelp* were transferred to the South African Navy in 1950-52 and renamed *Jan van Riebeeck* and *Simon van Stel*, respectively, and *Kempenfelt* and *Wager* were sold to Yugoslavia in 1957 and renamed *Kotor* and *Pula*, respectively. Of those converted into frigates *Wrangler* was transferred to the South African Navy on 29 Nov 1956 and renamed *Vrystaat*, and *Whirlwind* and *Wizard* were scheduled for disposal in 1966.

"V" CLASS. *Verulam* was converted by HM Dockyard, Portsmouth, but she is now without 4 inch, Bofors, Squids or director as trials ship for new A/S equipment. Of the original flotilla of eight "V" class destroyers, *Valentine* and *Vixen* were transferred to the Royal Canadian Navy in 1944 and renamed *Algonquin* and *Sioux*, respectively, and the leader *Hardy* was lost in the Second World War. Of those converted into frigates *Vigilant* and *Virago* were sold for scrap in 1965. *Venus* was scheduled for disposal by scrapping in 1965, and *Volage* was on the disposal list in 1966 (used as Harbour Training Ship, RM).

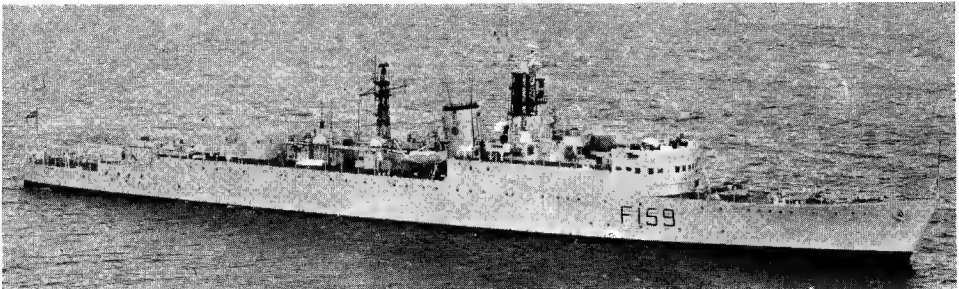
"U" CLASS. Converted in 1952-54, *Ulster* at HM Dockyard, Chatham, *Undaunted* by J. Samuel White & Co Ltd, Cowes, *Urania* by Harland & Wolff, Liverpool, and *Ursa* by Palmers, Hebburn. *Ulster* has a bowl-shaped sponson at the break and "Leopard" type bridge, *Grenville* and *Undaunted* are fitted with helicopter platform aft. In July 1966 the 20 x 30 ft section from the stern of *Urchin* was fitted to *Ulster*, damaged in May, at HM Dockyard, Devonport. Photographs of *Urania* in the 1959-60 to 1961-62 editions, of *Undaunted* in the 1962-63 to 1965-66 editions, of *Ursa* in the 1963-64 to 1966-67 editions. *Ulysses*, *Undine* and *Urchin* were all listed for disposal by scrapping in 1965. **TROUBRIDGE.** Different from early Type 15's. Her conversion was started by HM Dockyard, Portsmouth, in 1955, but completed by J. Samuel White & Co Ltd, Cowes, on 29 July 1957. Has "Leopard" type bridge and 40 mm mounting on the break of the forecastle. Photograph in the 1965-66 and 1966-67 editions. For disposals of "T" flotilla, Type 16, see next page.

Name	No.	Builders	Laid down	Launched	Completed
GRENVILLE	F 197	Swan, Hunter & Wigham Richardson, Ltd	1 Nov 41	12 Oct 42	27 May 43
TROUBRIDGE	F 09	John Brown & Co Ltd, Clydebank	10 Nov 41	23 Sep 42	8 Mar 43
ULSTER	F 83	Swan, Hunter & Wigham Richardson, Ltd	12 Nov 41	9 Nov 42	30 June 43
UNDAUNTED	F 53	Cammell Laird & Co Ltd, Birkenhead	8 Sep 42	19 July 43	3 Mar 44
URANIA	F 08	Vickers-Armstrongs Ltd, Barrow	18 June 42	19 May 43	18 Jan 44
URSA	F 200	John I. Thornycroft & Co Ltd, Woolston	2 May 42	22 July 43	1 Mar 44
VERULAM	F 29	Fairfield SB & Eng Co Ltd, Govan	26 Jan 42	22 Apr 43	10 Dec 43
WAKEFUL	F 159	Fairfield SB & Eng Co Ltd, Govan	3 June 42	30 June 43	17 Feb 44
ZEST	F 102	John I. Thornycroft & Co Ltd, Woolston	21 July 42	14 Oct 43	20 July 44



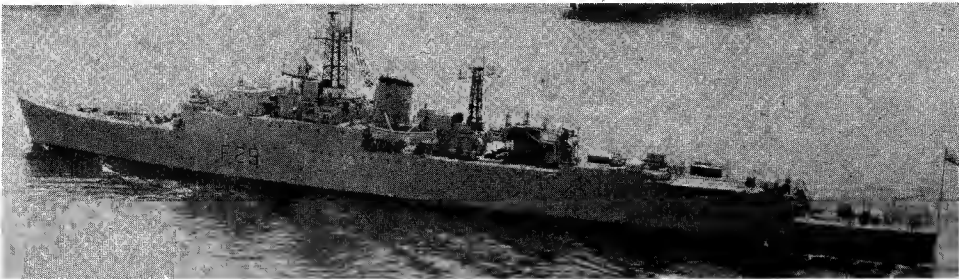
ULSTER

1966, Wright & Logan



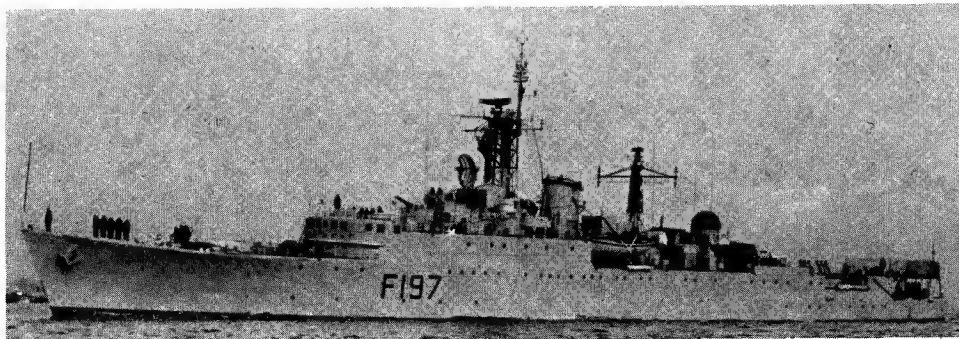
WAKEFUL

1967, Skyfotos



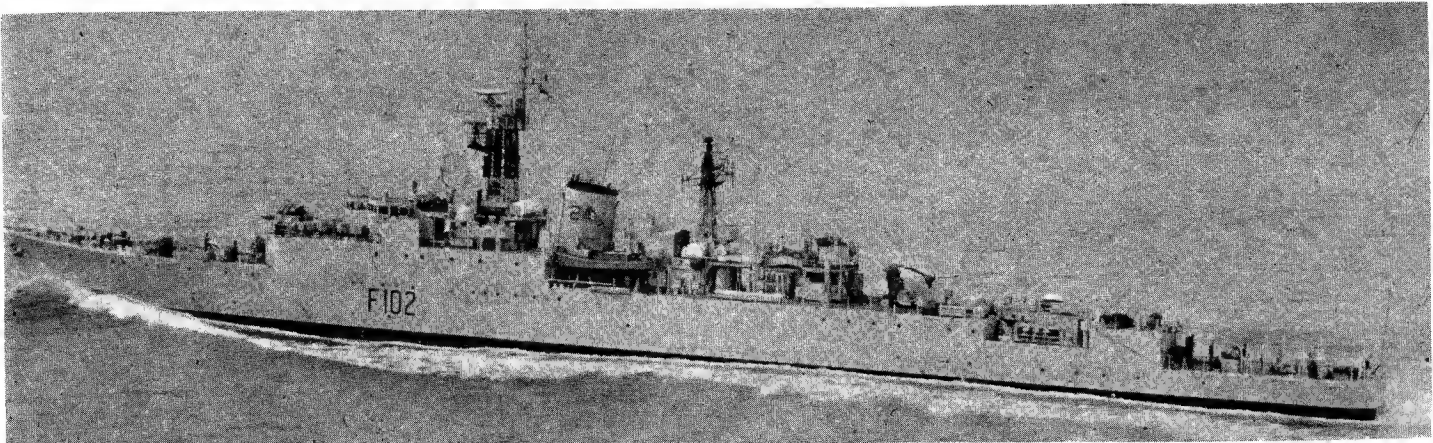
VERULAM

1967, A. & J. Pavia



GRENVILLE

1967, Wright & Logan



ZEST

1966, Official

Fast Anti-Submarine Frigates (ex-Destroyers)—continued

2 Early "Type 15" 1st Rate
"R" Class
(Fully Converted from Destroyers)

Displacement, tons	2 200 standard; 2 710 full load
Length, feet (metres)	339.5 (103.5) pp; 350 (106.7) wl; 358.2 (109.2) oa
Beam, feet (metres)	35.7 (10.9)
Draught, feet (metres)	17 (5.2) max
Guns, surface	2—4 in (102 mm) twin
Guns, AA	2—40 mm Bofors
A/S	2 Limbo 3-barrelled DC mortars
Boilers	2 Admiralty 3-drum type
Main engines	Parsons geared turbines 40 000 shp; 2 shafts
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	2 800 at 20 knots
Oil fuel (tons)	580
Complement	180

Former fleet destroyers, converted to prototype fast frigates. Bridges, funnel, masts, superstructure, 4—4.7 inch guns in single mountings, 4—2 pdr pompons, 8—20 mm AA guns and 8—21 inch tubes in quadruple mountings, were removed entirely and each ship was stripped down to the bare hull. The fore-castle deck was then extended aft, extensive use being made of aluminium to reduce top weight. A new superstructure was built up, two short lattice masts stepped, short raked funnel erected, and two anti-submarine mortars arranged *en echelon*, mounted in the after shelter deck. They had a completely new armament, and represented the new conception of frigate submarine-killers. Conversion of *Relentless* at HM Dockyard, Portsmouth, was completed in July 1951. She was originally fitted with torpedo tubes for experimental purposes. Refitted in 1955-56. *Rapid* was converted by Alex Stephen & Sons, Ltd, Govan, Glasgow, in 1952-53.

CLASS. Of four original sister ships *Racehorse* was scrapped (as destroyer) in 1950, and *Raider*, *Redoubt* and *Rotherham* (Leader) were transferred to the Indian Navy (as destroyers) in 1949 and renamed *Rana*, *Ranjit* and *Rajput*, respectively.

DISPOSALS. Sister ships (as frigates) *Roebuck* and *Rocket* were on the list for disposal by scrapping in 1965, and *Rapid* was on the sales list in 1965. In Mar 1966 *Rapid* carried out speed trials in the Solent in prospect of transfer from the Royal Navy to the Ecuadorian Navy, but the deal was not effected, and she is now seagoing training ship for engine room artificer apprentices at HMS Caledonia, Rosyth.

2 "Loch" Class. 2nd Rate
(Anti-Submarine Type)

Displacement, tons	1 610 standard; 2 449 full load
Length, feet (metres)	286 (87.2) pp; 297.2 (90.6) wl; 307 (93.6) oa
Beam, feet (metres)	38.5 (11.7)
Draught, feet (metres)	14.7 (4.5) max
Guns, surface	2—4 in (102 mm)
Guns, AA	6—40 mm
A/S	2 Squid 3-barrelled DC mortars
Boilers	2 Admiralty 3-drum; 225 psi
Main engines	2 4-cyl triple expansion 5 500 ihp; 2 shafts
Speed, knots	19.5
Radius, miles	9 500 at 12 knots
Oil fuel (tons)	753
Complement	124 to 140

Designed mainly for anti-submarine escort. Originally displaced 1 435 tons standard (2 260 tons full load). *Loch Killisport* has fibre glass shield on "A" gun. When modernised these ships were air-conditioned for service in the Persian Gulf.

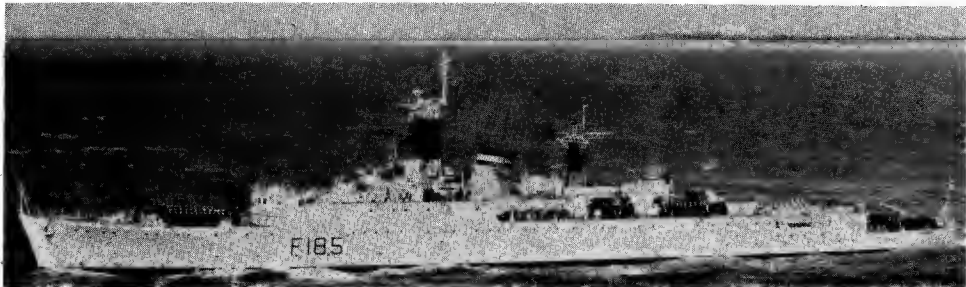
GUNNERY. Before modernisation they mounted 1—4 inch, 4—40 mm AA and 4—2 pdr guns.

TRANSFERS. *Loch Ard*, *Loch Boisdale* and *Loch Cree* were presented to the South African Navy in 1944-45, and renamed *Transvaal*, *Good Hope*, and *Natal*, respectively, and *Loch Achanalt*, *Loch Achray*, *Loch Eck*, *Loch Katrine*, *Loch Morlich* and *Loch Shin* were sold to the Royal New Zealand Navy in 1948 and renamed *Pukaki*, *Kaniere*, *Hawea*, *Rotoiti*, *Tutira* and *Taupo*, respectively. *Loch Insh* was transferred to the Royal Malaysian Navy in 1964 and renamed *Hang Tuah*.

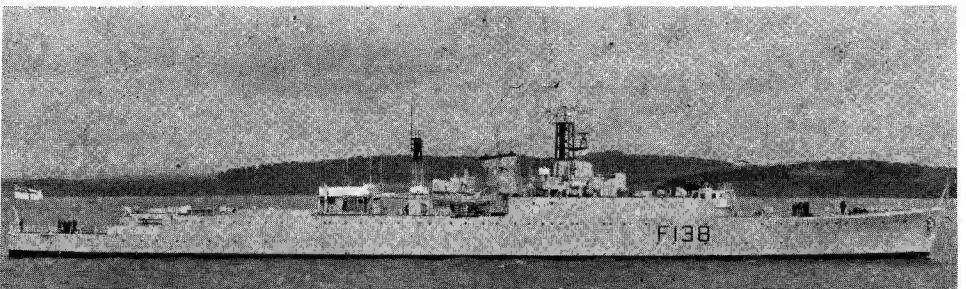
DISPOSALS. *Loch Glendhu* and *Loch Quoich* were scrapped in 1957, *Loch Scavaig* and *Loch Tarbert* in 1959, *Loch Arkalg*, *Loch Dunvegan* and *Loch Killin* in 1960, *Loch Gorm* in 1962. *Loch Craggie*, *Loch More*, *Loch Tralaig* in 1963. *Loch Alvie* and *Loch Veyatie* in 1965 and *Loch Ruthven* in 1966. *Loch Fyne* and *Loch Lomond* were listed for disposal in 1966.

MODIFIED "LOCH" CLASS DISPOSALS. *Woodbridge Haven* (ex-*Loch Torridon*), built as a "Loch" class frigate but converted into a Submarine Depot and Repair Ship and reclassified as a Minesweeper Support Ship in 1960, was broken up at Blyth in Aug 1965. Sister ship *Derby Haven* (ex-*Loch Assynt*) was transferred as a frigate to the Imperial Iranian Navy (Persia) in 1949 and renamed *Babr* (*Panther*).

Name	No.	Builders	Laid down	Launched	Completed
RAPID	F 138	Cammell Laird & Co, Birkenhead	16 June 1941	16 July 1942	20 Feb 1943
RELENTLESS	F 185	John Brown & Co Ltd, Clydebank	20 June 1941	15 July 1942	30 Nov 1942



RELENTLESS 1966, Skyfotos



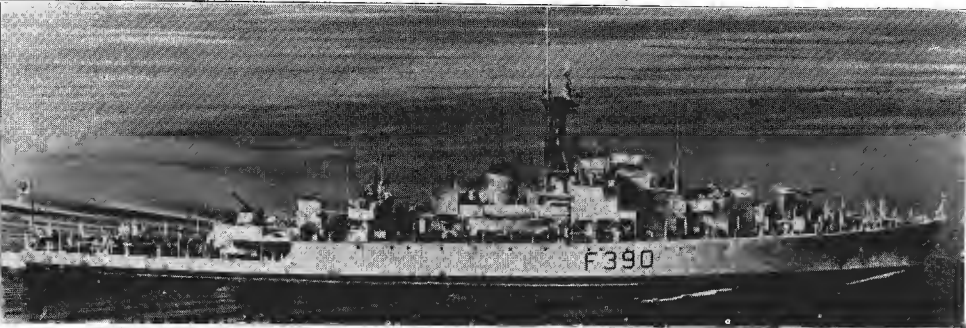
RAPID July 1967, Official

DISPOSALS OF TYPE 16
Of the seven Type 16 1st Rate fast anti-submarine frigates of the "T" class (limited conversion from destroyers), *Teazer*, *Tenacious*, *Termagant*, *Tyran* and *Tumult* were broken up in 1965, and *Tuscan* and *Terpsichore* in 1966.

DISPOSALS OF SMALLER "TYPE 16"
Of the three fast anti-submarine frigates of the Smaller "Type 16", Limited Conversion from Destroyers, *Paladin* was scrapped in 1962, *Orwell* in 1965, and *Petard* (ex-*Persistent*) was for disposal in 1965.

FRIGATES

Name	No.	Builders	Laid down	Launched	Completed
LOCH FADA	F 390	John Brown & Co Ltd, Clydebank	8 June 1943	14 Dec 1943	10 Apr 1944
LOCH KILLISPORT	F 628	Harland & Wolff Ltd, Belfast	28 Dec 1943	6 July 1944	9 July 1945



LOCH FADA 1964, Official

Of the two Flag Frigates (Despatch Vessels) of the Modified "Loch-Bay" Type, *Surprise* (ex-*Gerrans Bay*, ex-*Loch Carron*) was scrapped in 1965 (towed from Portsmouth on 26 June to the shipbreakers' yard on the Firth of Forth); and *Alert* (ex-*Dundrum Bay*, ex-*Loch Scamadale*) was paid off in 1964 for disposal in due course.

DISPOSALS OF "HUNT" TYPE 1
Brocklesby, last survivor of the famous "Hunt" group in the Royal Navy (designed as "fast escorts vessels", but rated as destroyers until 1947, when they were reclassified as anti-aircraft frigates) was paid off on 21 June 1963 (she had latterly been Sonar Trials and Training Ship) and listed for scrap in 1965. *Mendip*, transferred to China in May, 1948, was returned to the Royal Navy a year later, but transferred to Egypt in 1949 and captured by Israel in 1956. *Cottesmore* was also transferred to Egypt in 1951. *Maynell* and *Quantock* were purchased by Ecuador in 1955. *Liddesdale* was discarded. *Cotswood* and *Hambledon* were used as artificial harbour at Harwich, *Eglinton*, *Fernie*, *Holder*, *ness*, *Pythchley* and *Southdown* were scrapped in 1956, *Blencathra*, *Cleveland*, *Atherstone*, *Cattistock* in 1957. *Garth* in 1958 and *Whaddon* in 1959. *Berkeley*, *Exmoor*, *Quorn* and *Tynedale* were Second World War losses. For disposals of "Hunt" types II, III and IV see 1959-60 to 1966-67 editions.

DISPOSALS OF "BAY" CLASS
Whitesand Bay was scrapped in 1956. *Enard Bay* and *Widemouth Bay* in 1957, *Largo Bay* and *Start Bay* in 1958, *Carnarvon Bay*, *Cawsand Bay*, *Padstow Bay*, *St Austell Bay*, *Tremadoc Bay*, *Varyan Bay* and *Wigtown Bay* in 1959, *Cardigan Bay* and *St Brides Bay* in 1962. *Bigbury Bay* and *Burghead Bay* were transferred to Portugal at Plymouth on 11 May 1959 and renamed *Pacheco Pereira* and *Alvares Cobral* respectively, and *Morecambe Bay* and *Mounts Bay* were transferred to Portugal in 1961 after refit at John I Thornycroft & Co Ltd, Southampton and renamed *Vasco da Gama* and *D. Francisco de Almeida*. *Porlock Bay* transferred to Finland in April 1962.

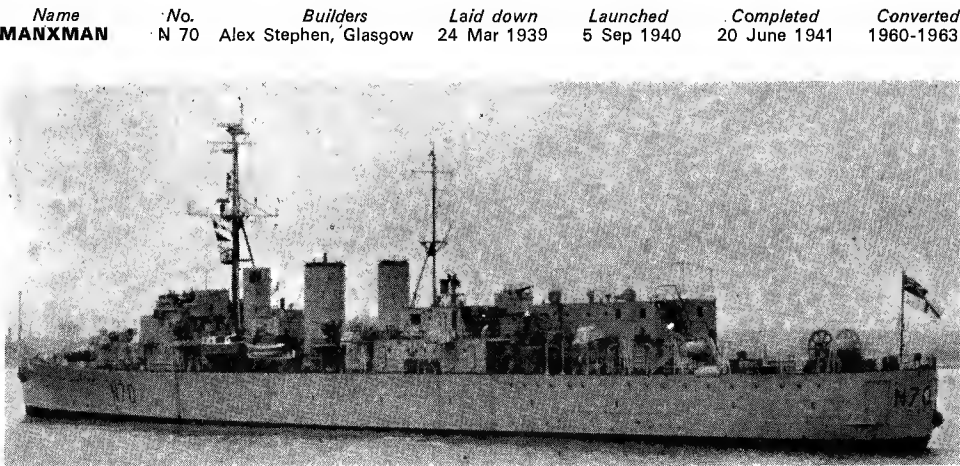
DISPOSALS OF "BLACK SWAN" CLASS
Woodcock was scrapped in 1955, *Cygnets*, *Wild Goose*, *Wren*, *Alacrity*, *Black Swan* in 1956, *Amethyst* in 1957, *Hind*, *Nereide*, *Peacock* and *Sparrow* in 1958, *Maggie* in 1959, *Opossum*, *Redpole* and *Snipe* in 1960, *Modeste* in 1961, *Pheasant* in 1963, *Crane* in 1964, *Starling* was scrapped in 1965 (towed from Portsmouth on 6 July to be broken up at Sheerness). *Whimbrel* was transferred to Egypt in 1949, *Actaeon*, *Flamingo*, *Hart* and *Mermaid* were allocated to West Germany in 1957, and delivered in 1958 and 1959. *Erne* was reduced to a hulk for Solent Division RNR in 1952 and renamed *Wessex*, but reverted to name *Erne* in 1964 and scrapped in 1965. *Ibis* and *Woodpecker* were Second World War losses.

MINESWEEPER SUPPORT SHIP (Ex-Fast Minelayer)

	Name	No.	Builders	Laid down	Launched	Completed	Converted
	MANXMAN	N 70	Alex Stephen, Glasgow	24 Mar 1939	5 Sep 1940	20 June 1941	1960-1963
Displacement, tons	3 000 standard; 4 000 full load						
Length, feet (metres)	400·5 (122·1) pp; 410 (125·0) wl; 418 (127·4) oa						
Beam, feet (metres)	40 (12·2)						
Draught, feet (metres)	15 (4·6)						
Guns, AA	6—40 mm Bofors, 1 twin, 4 single						
Mines	Much reduced from original 156 capacity						
Boilers	2 Admiralty 3-drum; 300 psi; 640°F						
Main engines	Parsons geared turbines 36 000 shp; 2 shafts						
Speed, knots	26						
Radius, miles	2 000 at 20 knots						
Oil fuel (tons)	750						
Complement	238 (11 officers, 227 men)						

Built under the 1938 Estimates. Torpedoed by an enemy submarine and badly damaged in Nov 1942. Recommissioned after conversion on 23 Feb 1963.

CONVERSION. Converted into a Minesweeper Support Ship at HM Dockyard, Chatham, at a cost of £1 000 000 to serve as parent ship for eight coatal minesweepers East of Suez. Her four 4-inch guns forward were suppressed; and two boilers forward were removed for the installation of additional generators and evaporators, her shp being halved; but her forward funnel was retained for use as a ventilator and for diesel exhaust trunking. Part of the mining flat was altered to take stores and spare mine-sweeping equipment. The stern mining doors are used for the exchange of sweeping gear.

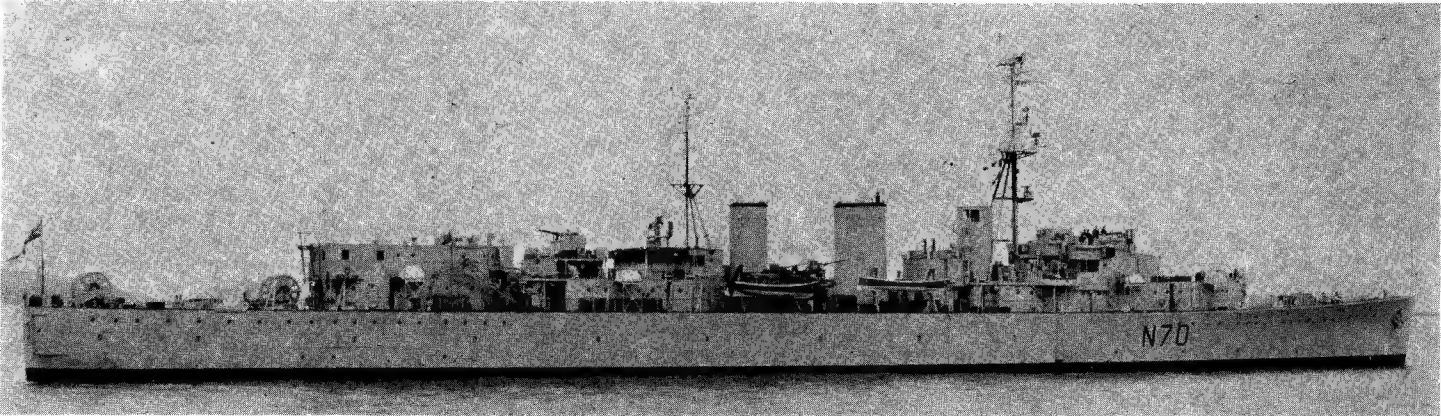


MANXMAN

1966, Official

PHOTOGRAPH. A port broadside view of *Manxman* before conversion appears in the 1961-62 and 1962-63 editions, and a port bow near broadside surface view after conversion in the 1963-64 to 1966-67 editions.

DISPOSALS
Of two sister fast minelayers *Apollo* was scrapped in 1962 and *Ariadne* in 1963. The fast minelayers *Abdiel*, *Latona* and *Welshman* of this class were lost during the Second World War.



MANXMAN

1967, Official

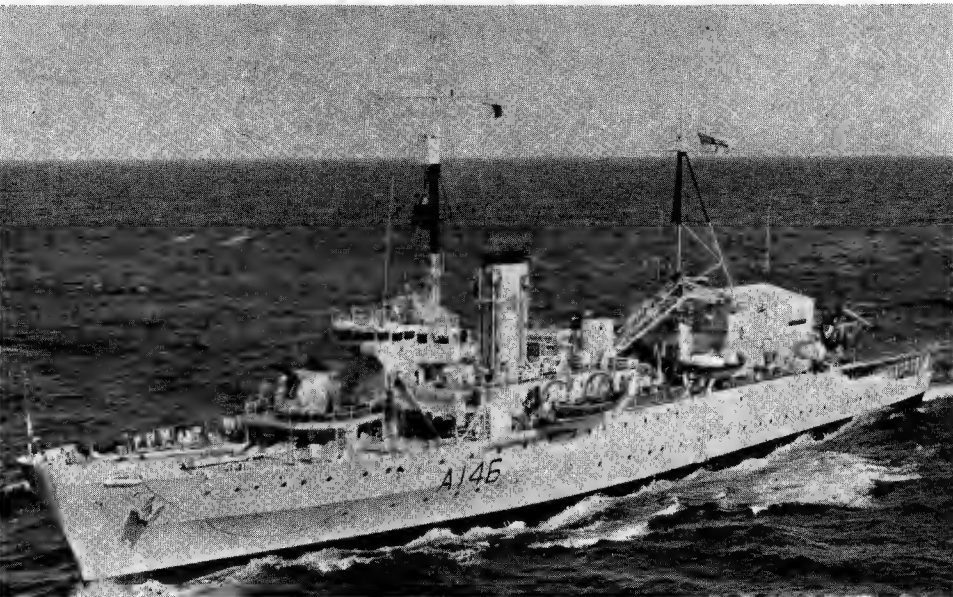
ICE PATROL SHIPS

	Name	No.	Builders	Laid down	Launched	Completed	Converted
	PROTECTOR	A 146	Yarrow & Co Ltd Scotstoun	15 Aug 1935	20 Aug 1936	31 Dec 1936	10 May 1955
Displacement, tons	3 450 standard; 4 250 full load						
Length, feet (metres)	310 (94·5) pp; 329 (100·3) wl; 338 (103·0) oa						
Beam, feet (metres)	53 (16·2)						
Draught, feet (metres)	15·3 (4·7)						
Aircraft	2 Helicopters						
Guns, surface	2—4 in (102 mm) twin						
Guns, AA	4—20 mm						
Guns, saluting	4—3 pdr						
Boilers	2 Admiralty 3-drum						
Main engines	BTH geared turbines; 9000 shp						
Speed, knots	20						
Radius, miles	4 000 at full speed						
Oil fuel (tons)	690						
Complement	238						

Originally built for netlaying and target towing. Ordered under the 1934 Estimates. Designed displacement was 2 860 tons standard. Re-engined in 1945.

CONVERSION. Refitted in 1955 for service in the Falkland Islands Dependencies with helicopter hangar, landing deck aft, enclosed bridge and enclosed look-out. The 4-inch guns were mounted forward instead of aft and 4—20 mm were suppressed. Strengthened against ice. Employed in lieu of a frigate, as a guardship and Antarctic survey ship. Refitted in 1957 with remodelled bridge, etc. Refitted in 1958 with small tripod mainmast stepped on the hangar, and crane amidships, etc. Officially reclassified as Ice Patrol Ship in 1959. Refitted from Oct to May each winter.

DISPOSAL
Protector's original sister ship, the netlayer *Guardian* was disposed of in 1962.



PROTECTOR

1967, Official

ENDURANCE (ex-Anita Dan)

Measurement, tons	2 641 gross
Length, feet (metres)	300 (91·44) oa
Beam, feet (metres)	46 (14·02)
Draft, feet (metres)	18 (5·5)
Aircraft	2 Whirlwind Mk IX helicopters

Main engines	B & W 550 VTBF diesels; 3 220 ihp; 1 shaft
Speed, knots	14
Range, miles	12 000 at 14 knots
Complement	119 (13 officers, 106 ratings) plus 11 spare births

Ten year old ship purchased from J. Lauritzen Lines, Copenhagen (announced on 20 Feb 1967). Strengthened for operation in ice. To be converted into an ice patrol ship in southern waters to eventually replace HMS *Protector*, undertaking hydrographic and oceanographic surveys for the Royal Navy, as support ship and guard vessel.
New name *Endurance* announced 27 July.

HEAVY REPAIR SHIP (Former Aircraft Carrier)

Name	No.	Builders	Laid down	Launched	Completed	Converted
TRIUMPH	A 108 (ex-R 16)	R & W Hawthorn Leslie, Hebburn	27 Jan 1943	2 Oct 1944	9 Apr 1946	HM Dockyard, Portsmouth 1 Jan 1958 to 7 Jan 1965
Displacement, tons	13 350 standard; 17 000 full load					
Length, feet (metres)	630 (192.0) pp; 650 (198.1) wl; 699 (213.1) oa					
Beam, feet (metres)	80 (24.4)					
Draught, feet (metres)	23.5 (7.2)					
Width, feet (metres)	112.5 (34.3) overall					
Aircraft	3 helicopters in flight deck hangar					
Guns, AA	4—40 mm					
Guns, saluting	3					
Boilers	4 Admiralty 3-drum Pressure 400 psi (28.1 kg/cm ²) Temperature 700°F (371°C)					
Main engines	Parsons geared turbines 40 000 shp, 2 shafts					
Speed, knots	24.25					
Radius, miles	10 000 at 14 knots; 5 500 at full speed					
Oil fuel (tons)	3 000					
Complement	500 (27 officers, 473 men) plus 285 (15 officers, 270 men) maintenance staff					



TRIUMPH

1967

Insulated for tropical service and partially air-conditioned. When she was still an aircraft carrier of the "Colossus" class her accommodation was modified in 1953 to fit her for employment as officer cadets' training ship, but she was converted into a heavy repair ship under the 1956-57 Estimates, and her sponsons removed. Commissioned for service after conversion on 7 Jan 1965. Sailed for Portsmouth on 1 Feb 1965 for the Far East where she is employed as an escort maintenance ship.

CONVERSION. Her reconstruction spanned a period of seven years, but the work actually took less time as her conversion was suspended for about 2.5 years while dockyard commitments of higher priority were met. Although intended for heavy repair the special machinery in the comprehensive workshops for this in the former hangar, 445 feet (135.6 metres) long, 52 feet (15.8 metres) wide, and 17.5 feet (5.3 metres) in depth, is placed in a state of preservation and her main role is escort maintenance, but she has space and facilities to undertake a variety of tasks including the carrying and maintenance of helicopters. She can take four destroyers and frigates alongside, two on each beam. Cost of conversion: £10 200 000, including capital expenditure on the heavy repair plant carried and dockyard and expenses over a protracted period.

CONSTRUCTION. As an aircraft carrier the flight deck, 690 feet (210.3 metres) long, 80 feet (24.4 metres) wide, and 39 feet (11.9 metres) above the water line, was strengthened to take aircraft of over 8 tons in weight. Sponsons could be dismantled to the extent of 3.5 feet on either side if necessary to allow for passage through Panama Canal. Mercantile type hull. Built to Lloyd's specifications up to main deck with the original intention of converting to commercial service after the war. Damage control; No great measure of vertical subdivision on the sandwich system as it was reckoned that it is better for ships to settle evenly in the event of damage and flooding than to foster capsizing.

ENGINEERING. Engines and boilers are arranged en echelon, one set of turbines and two boilers being installed side by side in each of the two main propelling machinery spaces, on the unit system, so that the starboard propeller shaft is longer than the port shaft. The maximum designed speed was 25 knots, at 225 rpm. The economical speed is 15 knots at 120 rpm.

APPEARANCE. Distinguished from aircraft carriers by generally lighter appearance, thin funnel, distinctive shape of ship's side forward, absence of sponsons, and block deckhouses on the former flight deck.

PHOTOGRAPHS. A starboard quarter view and a dead broadside surface view of *Triumph* appear in the 1965-66 and 1966-67 editions.

CLASS. Of her original sister aircraft carriers, the *Venerable* (renamed *Karel Doorman*) was sold to the Royal Netherlands Navy in 1948; *Colossus* (renamed *Arromanches*) was sold to the French Navy in 1951; and two were completed as maintenance aircraft carriers, *Perseus* (scrapped in 1958) and *Pioneer* (scrapped in 1954). *Vengeance* was lent to the Royal Australian Navy early in 1953, but was returned to the Royal Navy in August 1955, and sold to the Brazilian Navy in 1956 (announced by Admiralty on 14 Dec); she was modernised in 1957-60 and commissioned in 1961 under the name *Minas Gerais*. *Warrior* was sold to the Argentine Navy in July 1958 and commissioned under the name *Independencia* in Jan 1959.

DISPOSALS. Of *Triumph's* sister ships, *Glory* was broken up in 1961, and *Ocean* and *Theseus* in 1962. Half-sister *Perseus*, also *Unicorn*, were scrapped in 1958-59. (*Unicorn* arrived at Dalmeir on 15 June, 1959).



TRIUMPH

1967, Official

DESTROYER DEPOT SHIP

Name	No.	Builders	Laid down	Launched	Completed
TYNE	A 194	Scotts' SB & Eng Co Ltd, Greenock	15 July 1938	28 Feb 1940	28 Feb 1941
Displacement, tons	11 000 standard; 14 600 full load				
Length, feet (metres)	585 (178.3) pp; 613 (186.8) wl; 621 (189.3) oa				
Beam, feet (metres)	66 (20.1)				
Draught, feet (metres)	20.8 (6.3)				
Guns, surface	8—4.5 in (115 mm)				
Guns, AA	7—40 mm				
Boilers	4 three-drum type				
Main engines	Parsons geared turbines 7 500 shp; 2 shafts				
Speed, knots	17				
Oil fuel (tons)	1 400				
Complement	520 (normal) as depot ship 820 as flagship Accommodation for 1 000				

Built under the 1937 Estimates. Equipment includes two furnaces, each capable of melting 500 lb of metal at any temperature up to 1 500 degrees centigrade; a foundry and machine shops with milling and grinding machines. Refitted from late 1956 to early 1958 with enclosed lower bridge and improved operations room

and internal arrangements, etc, seven 40 mm guns replacing former smaller anti-aircraft guns. Was flagship of Home fleet from Autumn 1954 to August 1956, and again from April 1958 to 1960. Also parent ship of the 2nd Submarine Squadron in 1960, and Flagship of the Flag Officer, Flotillas, Home Fleet, until Apr 1961, when she became accommodation ship for Fleet Maintenance Units personnel at Portsmouth, from whence she was towed to Devonport on 18 July 1961 and placed in reserve and used as a living ship.

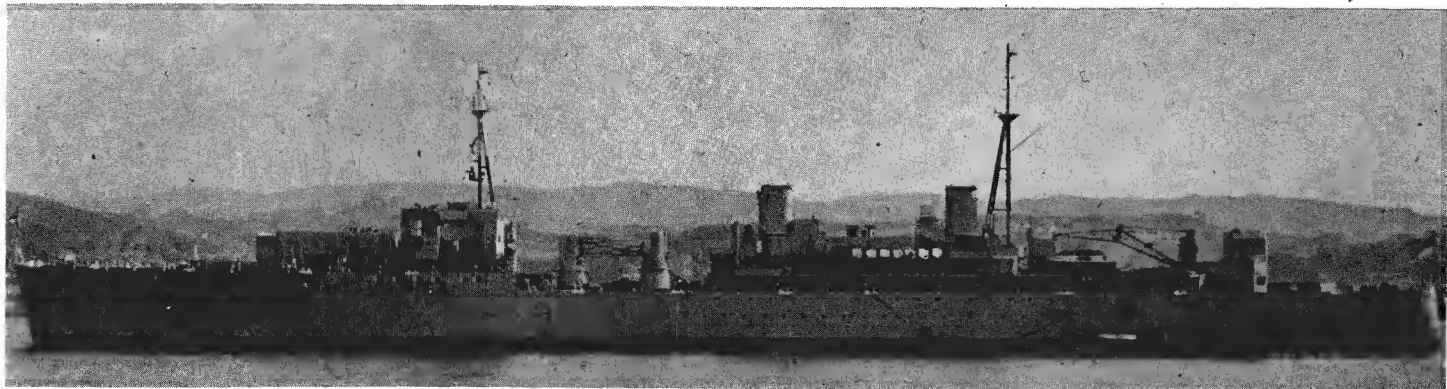


TYNE

Added 1962, courtesy Godfrey H. Walker Esq

SUBMARINE DEPOT SHIPS

	<i>Name</i>	<i>No.</i>	<i>Builders</i>	<i>Laid down</i>	<i>Launched</i>	<i>Completed</i>
	ADAMANT	A 164	Harland & Wolff, Ltd, Belfast	18 May 1939	30 Nov 1940	28 Feb 1942
Displacement, tons	12 700 standard; 16 500 full load					
Length, feet (<i>metres</i>)	620 (189.0) pp; 646 (196.9) wl; 658 (200.6) oa	Speed, knots	17	shipwrights' shops; light and heavy machine shops; torpedo and electrical shops; and submarine repair capacity of all kinds. When originally built she had facilities for nine submarines and accommodation for their complements. She has total accommodation for 800 officers and men of the ship and 550 from the submarines. Her eight 4.5 inch and twelve 40 mm guns have been removed.		
Beam, feet (<i>metres</i>)	70.5 (21.5)	Radius, miles	4 000 at 13.5 knots			
Draught, feet (<i>metres</i>)	21.2 (6.5)	Oil fuel (tons)	2 600			
Guns, saluting	4—3 pdr	Complement	750 (ships company + repair staff)			
Boilers	4 three-drum type	Ordered under the 1938 Estimates. Equipment includes a foundry, fitters', patternmakers', coppersmiths', and				
Main engines	Parsons geared turbines					
	8 000 shp; 2 shafts					



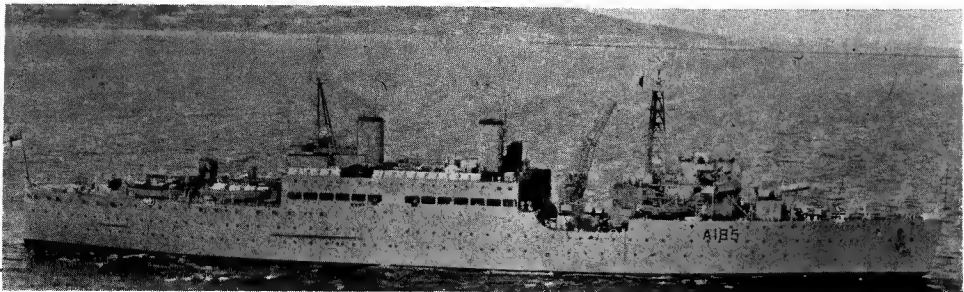
ADAMANT 1966 courtesy Dr Giorgio Arra,

Nuclear Powered Submarine Support Ships

	Name	No.	Builders	Laid down	Launched	Completed	Reconstructed
	FORTH	A 187	John Brown, Clydebank	30 June 1937	11 Aug 1938	14 May 1939	1962-1966
	MAIDSTONE	A 185	John Brown, Clydebank	17 Aug 1936	21 Oct 1937	5 May 1938	1958-1962

2 "Maidstone" Class

Displacement, tons	10 000 standard; 13 000 full load
Length, feet (metres)	497 (151.5) pp, 531 (161.8) oa
Beam, feet (metres)	73 (22.3)
Draught, feet (metres)	21.2 (6.5)
Guns, AA	5—40 mm Bofors (see Gunnery)
Boilers	4 Admiralty 3-drum
Main engines	Geared turbines (Brown Curtis in Forth; Parsons in Maidstone)
	7 000 shp; 2 shafts
Speed, knots	16
Oil fuel (tons)	2 300
Complement	695 (45 officers, 650 men)
	Accommodation for 1 159 (119 officers, 1 040 men) normal; over 1 500 max



MAIDSTONE 1966, Official

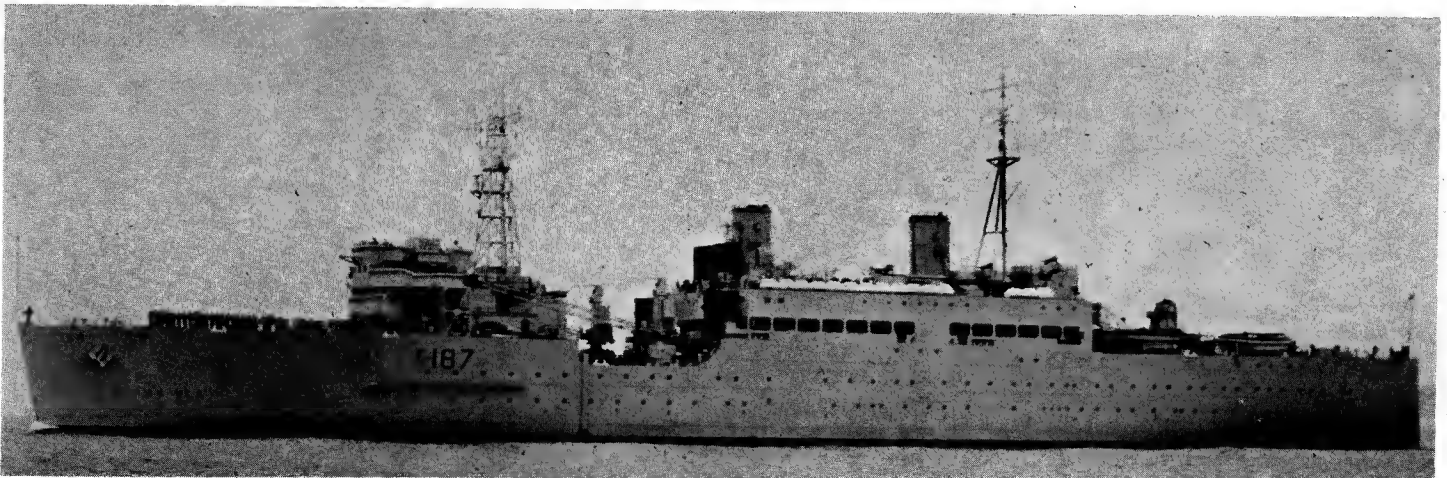
Parent Ships for Submarines. *Maidstone* was ordered on 17 Aug 1936 under the 1935 Estimates. She originally cost £993 000. *Forth* was laid down under the 1937 Estimates. Equipment includes a foundry, coppersmith's, plumbers' and carpenters' shops; heavy and light machine shops; electrical and torpedo repair shop; and plant for charging submarine batteries. Designed for looking after nine operational submarines, and capable of supplying over 140 torpedoes and a similar number of mines when required. Besides large workshops there are repair facilities on board for all material in the attached submarines, and extensive diving and salvage equipment is carried. There are steam laundry, cinema, hospital, chapel, two canteens, bakery, barber shops, fully equipped operating theatre and dental surgery. *Maidstone* was the Flagship of the Commander-in-Chief Home Fleet from 16 Aug 1956 until 31 Mar 1958.

RECONSTRUCTION. *Maidstone* was extensively reconstructed in HM Dockyard, Portsmouth in 1958-62 as a nuclear-powered submarine support ship, with a lattice foremast and additional superstructure amidships. The conversion and modernisation included refitting for acting as parent ship for the nuclear-powered submarine *Dreadnought*. *Forth* was similarly modernised and converted into a nuclear-powered submarine support ship in HM Dockyard Chatham, in 1962-66.

GUNNERY. As originally designed both ships mounted eight 4.5 inch guns in four twin housings, one forward, one aft, and one sponsored on either beam between the funnels, but these were removed during their conversion into nuclear submarines support ships. *Maidstone* formerly

also had a light AA gun in the bows, and she carried a 4-inch gun on a submarine pattern mounting, for training purposes only, on the starboard side just aft of the midships 4.5 inch turret.

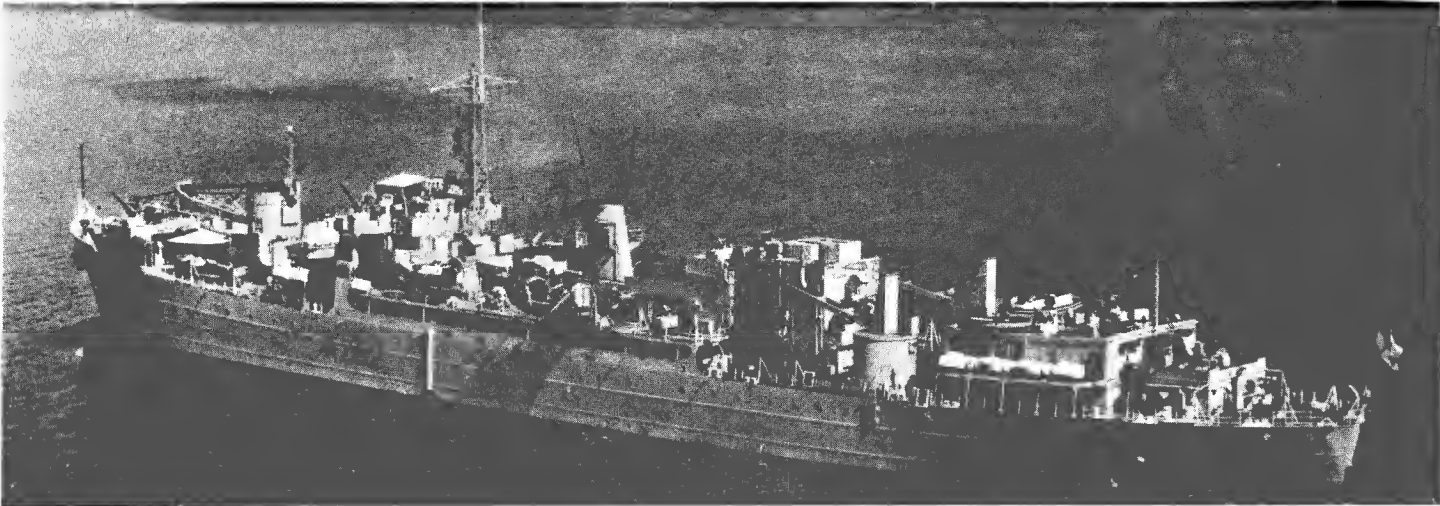
PHOTOGRAPHS. A starboard bow surface view of *Maidstone* before reconstruction appears in the 1960-61 and 1961-62 editions, and a larger port view, in the 1957-58 to 1959-60 editions. A port bow view after reconstruction appears in the 1962-63 edition, and a larger starboard broadside view in the 1963-64 to 1965-66 editions. A starboard broadside view of *Forth* before reconstruction appears in the 1960-61 to 1962-63 editions, and a starboard bow view in the 1963-64 to 1965-66 editions.



FORTH (after reconstruction as nuclear submarine support ship) 1966, Wright & Logan

MAINTENANCE SHIPS

	Name	No.	Builders	Laid down	Launched	Completed
Displacement, tons	HARTLAND POINT	A 262	Burrard Dry Dock N Vancouver	18 July 1944	4 Nov 1944	11 July 1945
Length, feet (metres)	Speed, knots 10					
Beam, feet (metres)	Oil fuel (tons) 1 000					
Draught, feet (metres)	Complement 445 (25 officers, 420 men)					
Guns, AA	modified bridge, novel short funnel, additional deckhouses, modern cranes, and new armament, messing arrangements and air conditioning. Her task was the maintenance of destroyers and frigates in the Far East which she carried out at any port required or where the fleet was concentrated. Returned to United Kingdom in May 1965. Sister ship <i>Dodman Point</i> disposed of in 1962.					
Main engines						
	Former Landing Ship Maintenance. Extensively refitted externally and internally and modernised as an Escort Maintenance Ship in 1959-60, with lattice foremast,					



HARTLAND POINT

1963, Official

	Name	No.	Builders	Laid down	Launched	Completed
	MULL OF KINTYRE	A 225	North Vancouver Ship Repairs Ltd	21 Dec 1944	5 Nov 1945	5 Apr 1946

Displacement, tons	8 500 standard; 10 200 full load
Length, feet (metres)	416 (126·8) pp; 441·5 (134·6) oa
Beam, feet (metres)	57·5 (17·5)
Draught, feet (metres)	20·8 (6·3)
Guns, AA	11—40 mm
Main engines	Triple expansion; 2 500 ihp
Speed, knots	10
Oil fuel (tons)	1 000

Originally an Armament Maintenance Ship, and subsequently a repair and Accommodation Ship. Converted into a Minesweeper Maintenance Ship (completed in Aug 1961). Based at Singapore in Oct 1961. *Mull of Galloway* (ex-Kinnaird Head) was scrapped in 1965.



MULL OF KINTYRE

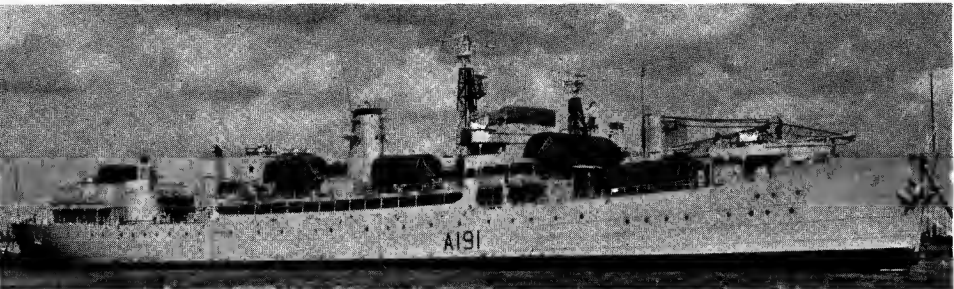
1967, Wright & Logan

3 "Head" Class

	Name	No.	Builders	Laid down	Launched	Completed
	BERRY HEAD	A 191	North Vancouver Ship Repairs	15 June 1944	21 Oct 1944	30 May 1945
	DUNCANSBY HEAD	A 158	Burrard DD, N Vancouver	29 July 1944	17 Nov 1944	8 Aug 1945
	RAME HEAD	A 134	Burrard DD, N Vancouver	12 July 1944	22 Nov 1944	18 Aug 1945

Displacement, tons	9 000 standard; 11 270 full load
Length, feet (metres)	416 (126·8) pp; 441·5 (134·6) oa
Beam, feet (metres)	57·5 (17·5)
Draught, feet (metres)	22·5 (6·9)
Guns, AA	11—40 mm (Berry Head, Rame Head)
Boilers	2 Foster Wheeler
Main engines	Triple expansion; 2 500 ihp
Speed, knots	10
Oil fuel (tons)	1 600

Escort Maintenance Ships, *Berry Head* and *Rame Head* (see photograph in the 1963-64 to 1966-67 editions) were refitted and modernised in 1960-63. *Duncansby Head* (see photograph in the 1962-63 edition) on 1 Dec 1962 became "half" of HMS *Cochrane* (Senior Officer Reserve Ships, Rosyth) jointly with *Girdleness* (see below). In 1963 *Rame Head* became HQ ship (Senior Officer Reserve Ships, Portsmouth).



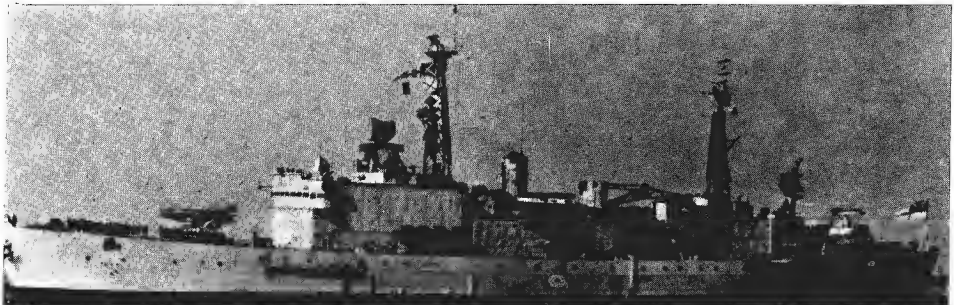
BERRY HEAD

1967, courtesy Dr Giorgio Arra

	Name	No.	Builders	Laid down	Launched	Completed
	GIRDLE NESS	A 387	Burrard Dry Dock, N Vancouver	7 Dec 1944	29 Mar 1945	5 Sep 1945

Displacement, tons	10 000 standard; 11 620 full load
Length, feet (metres)	416 (126·8) pp; 441·5 (134·6) oa
Beam, feet (metres)	57·5 (17·5)
Draught, feet (metres)	22·5 (6·9)
Main engines	Triple expansion; 2 500 ihp
Speed knots	10

Former Landing Craft Maintenance Ship converted to a guided weapons trials ship in HM Dockyard, Devonport, Oct 1953—July 1956, mounting a triple launcher for "Seaslug" missiles forward, see 1961-62 edition. Paid off as guided missiles trials ship on 5 Dec 1961. Re-classified as an accommodation ship in 1962, and with *Duncansby Head* (see above) recommissioned at HM Dockyard, Rosyth, under the joint administration name of *Cochrane* to take over the functions of the naval barracks and base supply depot at Donibristle. Her original sister ship *Buchan Ness* was scrapped in 1959.



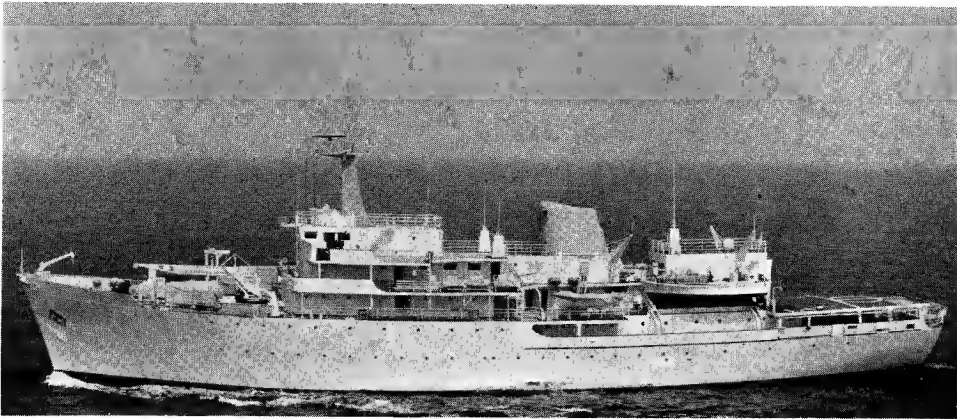
GIRDLE NESS

Dr Giorgio Arra

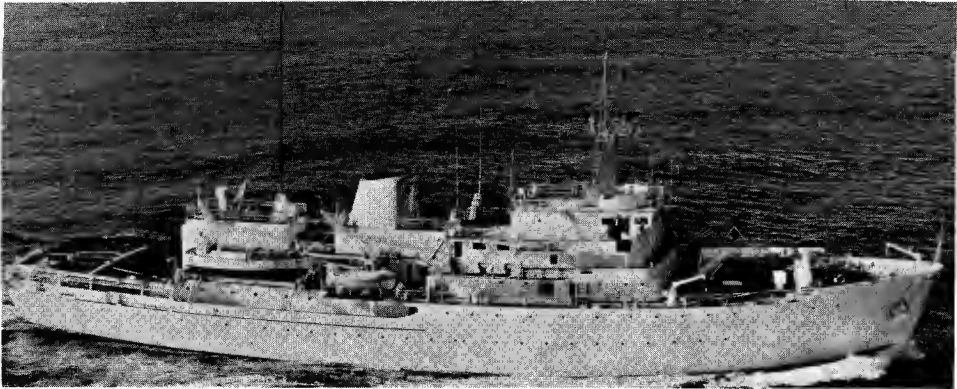
SURVEY SHIPS

3 "Hecla" Class

Name	No.	Builders	Laid down	Launched	Completed
HECATE	A 137	Yarrow & Co Ltd, Scotstoun	26 Oct 1964	31 Mar 1965	20 Dec 1965
HECLA	A 133	Yarrow & Co and Blythswood	6 May 1964	21 Dec 1964	9 Sep 1965
HYDRA	A 144	Yarrow & Co and Blythswood	14 May 1964	14 July 1965	5 May 1966



HYDRA 1967, Official



HECLA 1966, Official

Displacement, tons 1 915 light; 2 733 full load
Measurement, tons 2 898 gross
Length, feet (metres) 235 (71.6) pp; 260.1 (79.3) oa
Beam, feet (metres) 49.1 (15.0)
Draught, feet (metres) 15.6 (4.7)
Aircraft 1 Wasp helicopter
Main engines Diesel-electric drive; 1 shaft
3 Paxman "Ventura" 12-cyl Vee turbocharged diesels; 3,840 bhp.
1 electric motor; 2 000 shp
14.35 on trials
Speed, knots 20.000 at 9 knots
Radius, miles 450
Oil fuel, tons 11B (14 officers, 104 ratings)
Complement 123 (19 officers, 104 ratings)
Accommodation 123 (19 officers, 104 ratings)

New dual purpose deep ocean survey ships for the Royal Navy. The first to be designed with a combined oceanographical and hydrographical role, and the first to be built on commercial lines without a supplementary naval function. Of merchant ship design and similar in many respects to the Royal Research ship *Discovery*, they have range and endurance to fit them for their specialised work. The hull is strengthened for navigation in ice, and a propeller built into a transverse tunnel in the bow for good manoeuvrability. The fore end of the superstructure incorporates a Landrover garage and the after end a helicopter hangar with adjacent flight deck. Equipped with chartroom, drawing office and photographic studio; two laboratories, dry and wet; electrical, engineering and shipwright workshops, and large storerooms. Capable of operating independently of shore support for long periods. High standard of habitability, with library, canteen, laundry, cinema, and hospital. Air conditioned throughout. Ordered from Yarrow & Co Ltd, Scotstoun, in Feb 1964 (Blythswood Shipbuilding Co Ltd, Glasgow, collaborating on two of the three hulls). *Hecla* and *Hecate* were launched from the Blythswood yard.

1 Admiralty Design

Displacement, tons 1 940 standard; 2 200 full load
Length, feet (metres) 297 (90.5) pp; 315.2 (96.1) oa
Beam, feet (metres) 40 (12.2)
Draught, feet (metres) 11 (3.4) forward; 13.2 (4.0) aft
Aircraft 1 helicopter
Main engines 4 ASR-1 diesels (see *Engineering*)
2 940 shp; 2 shafts
Speed, knots 15.9
Radius, miles 9 500 at 10 knots
Complement 191 (19 officers, 172 ratings)
Accommodation 197 (20 officers, 177 ratings)

Designed by the Royal Navy from the start for hydrographic surveying and chart production. First survey ship to be equipped with a helicopter flight deck and a hangar, designed to enable a helicopter to land on and fly off for air survey photography and transport of personnel to shore observation stations. Air conditioning plant is installed to meet equatorial and polar climatic conditions. The ship carries three survey motor launches equipped with echo sounding apparatus. First British naval vessel to be built equipped from the beginning for cafeteria messing. Cost £1 345 000. Refitted with enclosed bridge in 1961, but the bridge wings were left open. Again refitted in 1962.

ELECTRICAL. The latest electronic aids to surveying and navigation are incorporated. Electrical power is provided from 360 kw 220 volt dc diesel generating sets.

1 "Bay" Class (Modified Frigate)

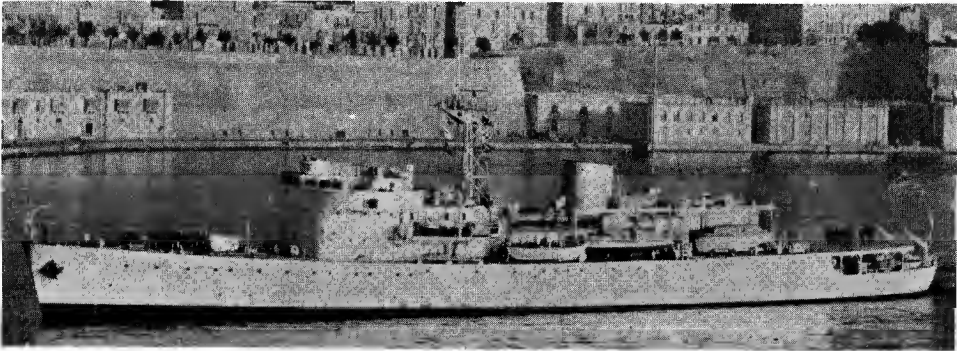
Displacement, tons 1 600 standard; 2 230 full load
Length, feet (metres) 286 (87.2) pp; 297 (90.5) wl; 307 (93.6) oa
Beam, feet (metres) 38.5 (11.7)
Draught, feet (metres) 14.5 (4.4)
Boilers 2 Admiralty 3-drum
Main engines 2 four-cyl. triple expansion
5 500 ihp; 2 shafts
Speed, knots 19.5
Oil fuel (tons) 580
Complement 149 (14 officers, 135 men)

Completed at HM Dockyard, Chatham. Equipped with radar and sonar. Refitted with enclosed bridge in 1961.

ELECTRICAL. Power at 220 volts DC is from two 120 kw steam-turbine and two 150 kW diesel generators.

DISPOSALS
Of three sister ships *Cook* (ex-Pegwell Bay, ex-Loch

Name	No.	Builders	Laid down	Launched	Completed
VIDAL	A 200	HM Dockyard, Chatham	5 July 1950	31 July 1951	29 Mar 1952

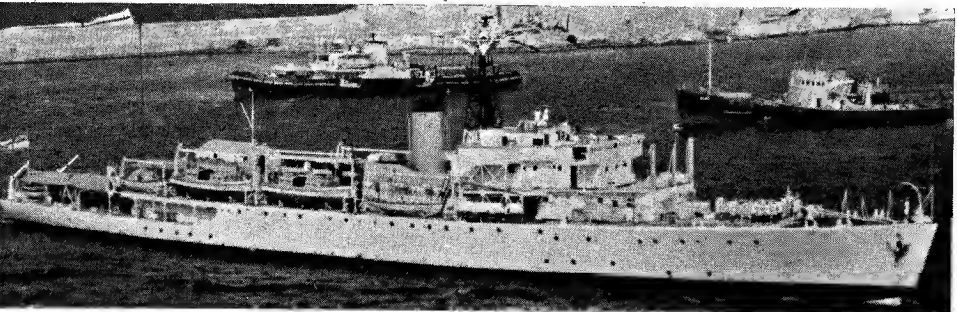


VIDAL 1967, A. & J. Pavia

HELICOPTER OPERATION. The after end of the fore-castle deck extension is a landing apron for the helicopter, housed in the after deck house hangar on the same level. diesels drive two shafts through reverse and reduction gear boxes. Each engine is of the 12 cylinder vee unsupercharged type with a rating of 1 050 hp at 920 rpm.

ENGINEERING. The main propelling machinery was designed in HM Dockyard, Chatham. The four ASR 1 **APPEARANCE.** Funnel and fore bridge are pear shaped in plan.

Name	No.	Builders	Laid down	Launched	Completed
DAMPIER (ex-Herne Bay, ex-Loch Eil)	A 303	Smiths Dock, Sth Tees	7 Aug 1944	15 May 1945	6 June 1948



DAMPIER 1966, A. & J. Pavia

Mockrum) was for disposal in 1965, *Owen* (ex-Thurso Bay, ex-Loch Glass) was sold to Portugal in Apr 1966 and renamed *Afonso de Albuquerque*.

COASTAL MINESWEEPERS AND MINEHUNTERS

70 "Ton" Class

ALVERTON (ex-Thames, ex-Alverton)	FLOCKTON	NORTHUMBRIA (ex-Ouainton)
APPLETON	GAVINGTON	NURTON (ex-Montrose, ex-Nurton)
ASHTON	GLASSERTON	OLSTON
BEACHAMPTON	HIGHBURTON	PUNCHESTON
BELTON	HUGHTON	REPTON (ex-Ossington)
BILDESTON	HUBBERSTON	ST. DAVID (ex-Crichton, ex-Clyde, ex-Crichton)
BLAXTON	ILMINGTON	SHAVINGTON
BOSSINGTON (ex-Embleton)	INVERMORISTON	SHERATON
BRERETON (ex-St. David, ex-Brereton)	IVESTON	SHOULTON
BRINTON	KEDLESTON	SOBERTON
BRONINGTON (ex-Humber, ex-Bronington)	KELLINGTON	SLUBBINGTON
BURNASTON	KILLIECRANKIE (ex-Bickington, ex-Curzon, ex-Bickington)	THAMES (ex-Buttington, ex-Venturer, ex-Buttington)
CHILCOMPTON	KILMOREY (ex-Alfriston, ex-Warsash, ex-Alfriston)	UPTON
CHAWTON	KIRKLISTON (ex-Kilmorey, ex-Kirkliston)	VENTURER (ex-Hodgeston, ex-Northumbria, ex-Hodgeston)
CLARBESTON	LALESTON	WALKERTON
CLYDE (ex-Amerton, ex-Mersey, ex-Amerton)	LETTERSTON	WARSASH (ex-Boulston)
CONISTON	LEVERTON	WASPERTON
CROFTON	LEWISTON	WILKINSTON
CURZON (ex-Fittleton)	MADDISTON	WISTON
CUXTON	MAXTON	WOLVERTON
DERRITON (ex-Killiecrankie, ex-Derriton)	MARYTON	WOOLASTON
DARTINGTON	MERSEY (ex-Pollington)	YARNTON
DUFTON	MONKTON (ex-Kelton)	
FISKERTON	MONTROSE (ex-Dalswinton)	
Displacement, tons	360 standard; 425 full load	
Dimensions, feet	140pp; 153 oa x 28.8 x 8.2	
Guns:	1—40 mm AA (removed in some); 2—20 mm AA (minehunters 2—40 mm)	
Main Engines	2 diesels; 2 shafts; 2 500 (JVSS 12 Mirlees), 3 000 (18A-7A Deltic) bhp = 15 knots (max); See <i>Engineering</i>	
Oil fuel (tons)	45	
Radius, miles	2 300 at 13 knots	
Complement	27 (minehunters 5 officers, 31 ratings)	

These were a new type with double mahogany hull and constructed of aluminium alloy and other materials with the lowest possible magnetic attraction to attain the greatest possible safety factor when sweeping. John I Thornycroft & Co Ltd, Southampton, were the "parent" firm for the group which built this class of uniform design capable of sweeping both contact and influence type mines and dealing with mines operated magnetically and acoustically. The last, *Lewiston*, was completed in 1960, and the first, *Coniston*, in Feb 1953; she has Vosper stabilisers, and the whole class are being so fitted. *Stubbington* and others have fibre-glass bottom sheathing.

Disposals

Badminton, *Carhampton*, *Caunton*, *Kildarton*, *Rennington*, *Rodington*, *Tarltan* and *Wotton* were on the disposal list in 1966; *Calton*, *Fenton*, *Floriston* and *Sefton* were officially approved for disposal by scrapping in 1966-67; and *Bevington*, *Hickleton*, *Kemerton*, *Lanton*, *Penston*, *Picton* and *Santon* were on the sales list in 1967. *Repton* is in reserve at Gibraltar.

Nomenclature

Named after villages with the suffix "ton". Since 1954 some have been renamed on being allocated to the Royal Naval Reserve, taking the traditional names associated with the divisions (see below). Ships are not permanently attached to one division; on becoming due for refit they revert to their original names and might then be re-allocated to a different division or return to general service. The former Royal Navy and Royal Naval Reserve names are shown in parenthesis above.

Engineering

High speed diesels, standardised to simplify maintenance. The earlier vessels had Mirlees diesels, but most of the later units had Napier Deltic light weight diesels. *Highburton*, the first with Deltic diesels was accepted on 21 Apr 1955. Some early ships have undergone conversion from Mirlees to Deltic diesels. The generators for electrical power are in a separate engine room. Three-bladed propellers, 6 ft diameter, 400 r.p.m. *Shoulton*, refitted 1965-67 (recommissioned 5 Apr), has pumpjet propulsion.

Appearance

Ashton, *Chawton*, *Fiskerton*, *Houghton*, *Lewiston*, *Mersey* (ex-Pollington), *Nurton*, *Puncheston*, *Northumbria* (ex-Ouainton), *Repton*, *Sheraton*, *Soberton*, *Stubbington*, *Walcerton*, *Wilkieston*, *Wiston* and others are fitted with an enclosed or frigate bridge and tripod mast. *Appleton* and *Shoulton* covered bridge.

Minehunting

Shoulton was fitted with unique mine-hunting equipment, an all-British Sonar development which enables her to locate and classify any mine-like objects on the sea bed with accuracy and range previously impossible. Since then *Bossington*, *Brereton*, *Bronington*, *Derriton*, *Glasserton*, *Highburton*, *Hubberston*, *Ilmington*, *Iveston*, *Kellington*, *Kirkliston*, *Sheraton* and others have been or are being refitted as minehunters, with active rudders incorporating electric motors for manoeuvring at slow speed. *Highburton* and *Glasserton* fitted with Osbourne mine destroyer units.

Role Variations

Of this class *Belton*, *Soberton*, *Wasperton* and *Wotton* constituted a division of the Fishery Protection Squadron. *Iveston* is being converted to night guard aircraft ship, and *Invermoriston* is also being modified for SAR duties, PAS manned.

Transfers

Dunkerton and *Hazleton* were transferred to South Africa in 1955 and renamed *Pretoria* and *Kaapstad*, respectively. *Durweston*, *Overton*, *Whitton* and *Wennington* to India in 1956, and renamed *Kakinada*, *Karwar*, *Connamore* and *Cuddalore*, respectively. *Castleton*, *Chilton*, *Dumbleton*, *Oakington*, *Packington* and *Stratton* to South Africa in 1958-59 and renamed *Johannesburg*, *East London*, *Port Elizabeth*, *Mosselbaai*, *Walvisbaai* and *Kimberley*, respectively, with *Durban* and *Windhoek*. *Darlston* was sold to Malaysia in 1960 and renamed *Mahamiru*, *Hexton* in 1963 and renamed *Ledang*, *Dilston* and *Essington* in 1964 and renamed *Jerai* and *Kinabalu*, respectively, and *Lullington* and *Thankerton* in 1966 and renamed *Tahan* and *Brinchang*, respectively. *Alcaston*, *Chediston*, *Jackton*, *Singleton*, *Somerleyton* and *Swanston* were transferred to Australia in 1962, and renamed *Snipe*, *Curlew*, *Teal*, *Ibis*, *Hawk*, and *Gull*, respectively, *Aldington* to Ghana in 1964 and renamed *Ejura*.

Royal Naval Reserve Units

Eleven units are renamed and attached to Royal Naval Reserve Division Headquarters as follows (Division under Name):—

<i>Thames</i>	<i>Curzon</i>	<i>Warsash</i>	<i>Venturer</i>	<i>St. David</i>	<i>Mersey</i>
<i>London</i>	<i>Sussex</i>	<i>Solent</i>	<i>Severn</i>	<i>S. Wales</i>	<i>Mersey</i>
<i>Kilmorey</i>	<i>Clyde</i>	<i>Montrose</i>	<i>Killiecrankie</i>	<i>Northumbria</i>	
<i>Ulster</i>	<i>Clyde</i>	<i>Tay</i>	<i>Forth</i>	<i>Tyne</i>	

(The Humber Division was disbanded in 1958 and H.M.S. *Humber* reverted to her original name *Bronington*).



SHAVINGTON

1965, Dr Giorgio Arra



LALESTON.

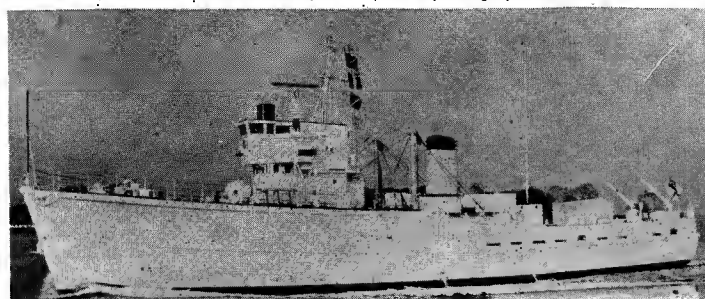
1967, Wright & Logan

Diving Conversion

Laleston was converted into diving trials ship (recommissioned on 22 Mar 1967).

Survey Conversions

Edderton and *Sullington* of this class were converted into survey ships in 1964 and renamed *Myrmidon* and *Mermaid*, respectively. See photographs below.



MERMAID (ex-Sullington)

1967, Official



SHERATON (Minehunter)

1965, Wright & Logan

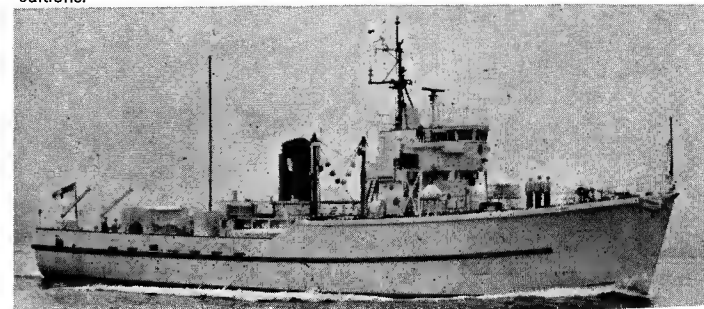


BEACHAMPTON

1967, A & J Pavia

Photographs

A photograph of *Coniston* appears in the 1953-54 to 1957-58 editions, of *Appleton* in the 1954-55, 1955-56, 1958-59 and 1959-60 editions, of *Bildeston* in the 1954-55 and 1955-56 editions, of *Boulston* in the 1955-56 to 1957-58 editions, of *Dufton* in the 1956-57 and 1957-58 editions, of *Mersey* (Amerton) in the 1956-57 edition, of *Highburton* in the 1957-58 edition, of *Bossington* and *Repton* in the 1958-59 and 1959-60 editions, of *Houghton* in the 1959-60 edition, of *Wilkieston* in the 1960-61 edition, of *Hickleton* and *Monkton* in the 1960-61 to 1964-65 editions, of *Wolverton* in the 1961-62 to 1964-65 editions, of *Burnaston* in the 1963-64 and 1964-65 editions, of *Lewiston* (frigate bridge, tripod mast) and *Shoulton* (Minehunter) in the 1963-64 to 1966-67 editions.



MYRMIDON (ex-Edderton)

1965, Wright & Logan

INSHORE MINESWEEPERS

21 "Ham" Class
M 2601, M 2701 and M 2777 Series

ARLINGHAM	PAS	FORDHAM	DGV	PUTTENHAM	RNXS
BIRDHAM	RNXS	FRITHAM	TRV	SHIPHAM	RNXS
BUCKLESHAM	TRV	HAVERSHAM	TRV	THAKEHAM	RNXS
DITTISHAM	TRV	LASHAM	TRV	THATCHAM	DGV
DOWNHAM	TRV	ODIHAM	RNXS	TONGHAM	PAS
EVERINGHAM	PAS	PAGHAM	RNXS	WARMINGHAM	DGV
FLINTHAM	TRV	PORTISHAM	RNXS	WOLDINGHAM	PAS

Displacement, tons 120 standard; 159 full load
Dimensions, feet 2601 Series: 100 pp; 106.5 oa x 21.2 x 5.5
2701 Series: 100 pp; 107 oa x 21.7 x 5.7
2777 et seq: 100 pp; 107.5 oa x 22 x 5.8
Guns 1—40 mm Bofors AA or 1—20 mm Oerlikon AA forward (see Gunnery)
Main Engines 2 Paxman diesels; 1 100 bhp = 14 knots max 9 (knots sea speed) see Engineering
Oil fuel (tons) 15
Complement 15 (2 officers, 13 ratings)

Designed to operate in shallow waters, rivers and estuaries. When built they were an entirely new type of vessel embodying novel features resulting from lessons learned during the war and in course of subsequent developments. Named after villages with the suffix "ham". The first inshore minesweeper, *Inglesham*, was launched by J Samuel White & Co Ltd, Cowes, on 23 Apr 1952. The 2701 series were of wooden construction, whereas the 2601 series were of composite construction. All the M 2701 series had a rubbing strake, unlike the M 2601 and M 2001 series.

- DGV:**—Converted to Degaussing Vessels.
PAS:—Employed in the Port Auxiliary Service.
RNXS:—Adapted for the Royal Naval Auxiliary Service
TRV:—Converted to Torpedo Recovery Vessels.

GUNNERY. Most of the M 2601 series had the 40 mm gun replaced by a 20 mm gun. All the M 2701 series had a 20 mm gun (armament as minesweepers).
ENGINEERING. The main machinery was manufactured by Davey Paxman & Co Ltd, Colchester, or by Ruston & Hornsby Ltd, Lincpln, Foden Ltd, Sanbach, Cheshire, or Ransomes, Sims and Jeffries Ltd, Ipswich, under licence from Davey Paxman. Three-bladed propellers, 600 r.p.m.
NOMENCLATURE. *Fordham* was originally to have been named *Pavenham*.

PHOTOGRAPHS

A photograph of *Altham* appears in the 1957-58 and 1958-59 editions, of *Chillingham* in the 1958-59 and 1959-60 editions, of *Darsham* in the 1959-60 edition, of *Woldingham* in the 1960-61 to 1964-65 editions, and of *Polsham* in the 1963-64 to 1966-67 editions.



EVERINGHAM

1967 A & J Pavia

AUXILIARY SERVICE. The following were adapted for the Royal Naval Auxiliary Service:—*Birdham*, *Odiham*, *Pagham*, *Portisham*, *Puttenham*, *Shipham*, *Thakeham*; and *Arlingham*, *Everingham*, *Tongham* and *Woldingham* were employed in the Port Auxiliary Service.

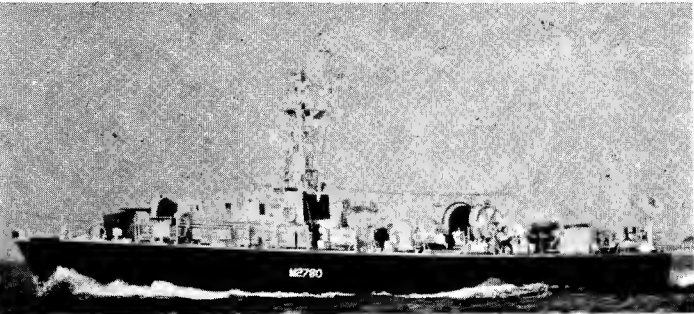
Buckleham, *Dittisham*, *Downham*, *Flintham*, *Fritham*, *Haversham* and *Lasham* were converted for service as Torpedo Recovery vessels.

Fordham, *Thatcham* and *Warmingham* have been converted into Degaussing Vessels to replace the older degaussing vessels of the converted MMS 1001 type.

COASTAL COMMAND RANGE AND RECOVERY VESSELS

Chelsham and *Bottisham* were transferred to the R.A.F. in 1966 for service at Plymouth as Coastal Command range and recovery vessels. They were numbered HMFA 5000 and HMFA 5001, discarding their former names.

SURVEY CONVERSIONS. *Powderham* and *Yaxham* were converted into inshore survey craft in 1964 on similar lines to the "E" class, see page 323 and renamed *Waterwitch* and *Woodlark*, respectively.



WOODLARK (ex-Yaxham)

Added 1965 Wright & Logan

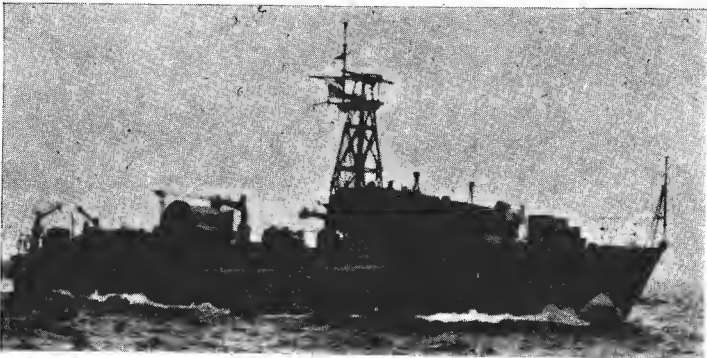
Inshore Minesweepers—continued
"Ham" Class—continued

TRANSFERS

Frettenham, *Isham*, *Kingham*, *Mersham*, *Mileham*, *Petersham*, *Pineham*, *Rendlesham*, *Riplingham*, *Sparham*, *Stedham*, *Sulham*, *Tibenham*, *Wexham* and *Whippingham* were transferred to France in 1954-55; *Hildersham* and *Littleham* to India in 1955 and renamed *Bimlipitan* and *Bassein*, respectively; *Bassingham* to East Africa on 25 June 1958, but returned on 9 Oct 1961; *Bedham* to Malaysia in 1958 and renamed *Lanka Suka*; *Cardingham* and *Etchingham* to Hong Kong R.N.V.R. in 1959, but returned on 1 Apr 1966; *Altham*, *Asheldham* and *Brantingham* to Malaysia in 1959 and renamed *Sri Johar*, *Sri Perlis* and *Temasek*, respectively, *Malham* and *Ottringham* to Ghana at the end of 1959, and renamed *Yogoda* and *Afadzato* respectively; and *Harpham* and *Greetham* to Libya in 1963, and renamed *Brak* and *Buana*, respectively; *Boreham* and *Felmersham* to Malaysia in 1966 and renamed *Jerong* and *Todak*, respectively; *Popham* and *Wintringham* to Australia on 9 June 1966; *Blunham*, *Bodenham* and *Elsenhams* to South Arabia in 1967.

DISPOSALS

Bisham and *Edlingham* damaged by fire on 29 Sep 1956, were scrapped in 1959. *Bassingham*, *Brigham*, *Chillingham*, *Cranham*, *Halsham*, *Inglesham*, *Mickleham*, *Pulham*, (renamed *Isis* while attached to London R.N.R.), *Rampisham* (renamed *Squirrel* while on *Fishery Protection*), *Reedham*, *Sidlesham*, *Tresham* and *Wrentham* were on the disposal list in 1964, *Cobham*, *Damerham*, *Darsham*, *Davenham*, *Glenham* and *Hovingham* were listed for disposal by scrapping in 1965, *Abbotsham*, *Georgeham*, *Ledsham*, *Ludham*, *Neasham*, *Nettleham*, *Rackham*, *Sandringham*, *Saxlingham*, *Shrivenham* and *Thornham* were officially approved for disposal by scrapping in 1966, *Ockham* and *Polsham* in 1967.



ODIHAM

Added 1964, J W Kennedy

3 "Ley" Class. M 2001 Series

AVELEY	BREARLEY	ISIS (ex-Cradley)
Displacement, tons	123 standard; 164 full load	
Dimensions, feet	100 pp; 107 oa x 21.8 x 5.5	
Guns	1—40 mm AA or 1—20 mm AA forward	
Main Engines	2 Paxman diesels; 700 bhp = 13 knots	
Oil fuel (tons)	15	
Complement	15 (2 officers, 13 ratings)	

The "Ley" class differed from the "Ham" class. They were of composite (non-magnetic metal and wooden) construction, instead of all wooden construction. Their superstructure and other features also differed considerably. They had no winch and sweeping gear, as they were mine hunters; not sweepers. They had smaller engines as less towing power was needed. *Brearley* is attached to the Britannia Royal Naval College, and *Aveley* to Plymouth.

PHOTOGRAPHS

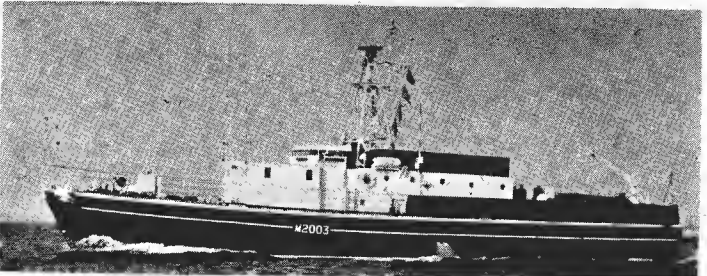
A photograph of *Aveley* appears in the 1954-55 edition, of *Watchful* in the 1959-60 to 1962-63 editions, of *Squirrel* in the 1964-65 and 1965-66 editions, and of *Dingley* in the 1965-66 and 1966-67 editions.

ROYAL NAVAL RESERVE

Cradley was allocated to the London Division R.N.R. in 1963 and renamed *Isis*, relieving *Pulham* (renamed *Isis* from 1956 to 1963 while in London R.N.R.).

DISPOSALS

Broadley, damaged by fire on 29 Sep 1956, was scrapped in 1959. *Brenchley* and *Brinkley* were for disposal by scrapping in 1965. *Chailey* was on the Sales List in 1965. *Squirrel* and *Watchful* (originally named *Burley* and *Broomley*, respectively; until allocated to Fishery protection in 1960 and 1958) were approved for disposal by scrapping in 1966, and *Dingley* in 1967.



BREARLEY

1966, Wright & Logan



ISIS

1967, Skyfotos

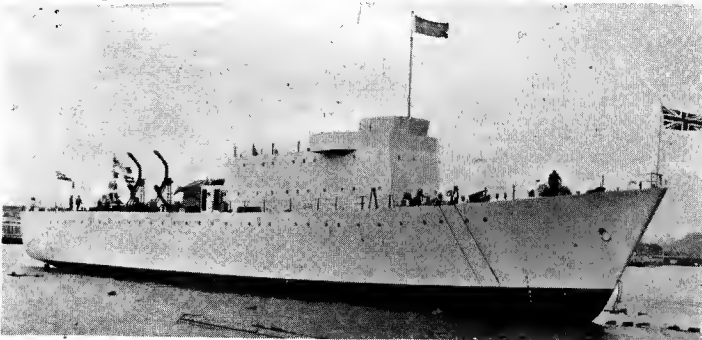
MINELAYERS

1 New Construction

ABDIEL

Displacement, tons	1 200 standard; 1 500 full load
Dimensions, feet	244.5 pp; 26.5 oa x 38.5 x 10
Main Engines	2 Paxman Ventura 16 cyl. pressure charged diesels; 2 690 bhp; 1 250 rpm; Speed over 15 knots
Complement	123 (14 officers, 109 ratings)

Exercise minelayer for the Royal Navy ordered in June 1965 from John I Thornycroft & Co Ltd, Woolston, Southampton. Laid down on 23 May 1966. Launched on 27 Jan 1967. Scheduled to be completed in 1967. Main machinery manufactured by Daye Paxman, Colchester. Main gearing supplied by Messrs Wisemans. Her function will be in support of mine counter-measure forces, in laying exercise mines and the maintenance of these forces when they are operating away from their shore bases. She will replace a number of aging vessels now employed on this work. Living accommodation will be to high standards.



ABDIEL (launch)

1967, Official



ABDIEL (silhouette)

1967, Vosper Thornycroft

1 Coastal Type

PLOVER N 26

Displacement, tons	805 standard; 1 020 full load
Dimensions, feet	180 pp; 195.2 oa x 37.5 x 10
Main Engines	Triple expansion; 1 400 ihp = 14.75 knots
Complement	69

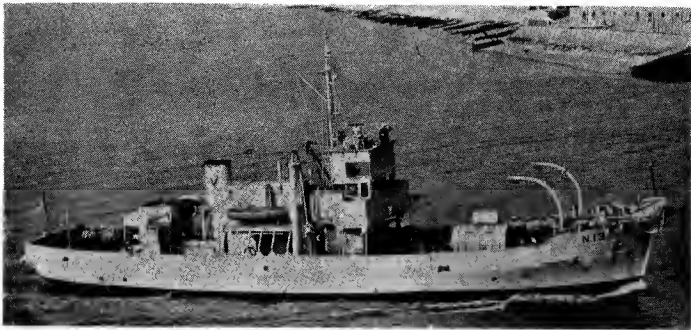
Designed and built as a coastal minelayer. Built by Wm. Denny & Bros Ltd, Dumbarton. Laid down on 7 Oct 1936. Launched on 8 June 1937. Completed in Sep 1937. Formerly employed as minelaying tender to the Torpedo and Anti-submarine School in H.M.S. *Verdon*. Refitted in 1955 when the mainmast was stepped, the radar cabinet on the flag deck removed, and the radar aerial erected on the roof of the bridge. Her original two machine guns were removed. Now employed in the Portsmouth Squadron under the administration of the Commander-in-Chief.

PHOTOGRAPHS. A large bow surface view appears in the 1956-57 to 1959-60 editions, a larger starboard quarter oblique aerial view in the 1959-60 edition, a starboard aerial view in the 1960-61 to 1962-63 editions and a starboard broadside surface view in the 1963-64 to 1965-66 editions.



PLOVER

1966, Skyfotos



MINER III

1966, courtesy Dr Giorgio Arra

CONTROLLED MINELAYERS

5 "Miner" Class

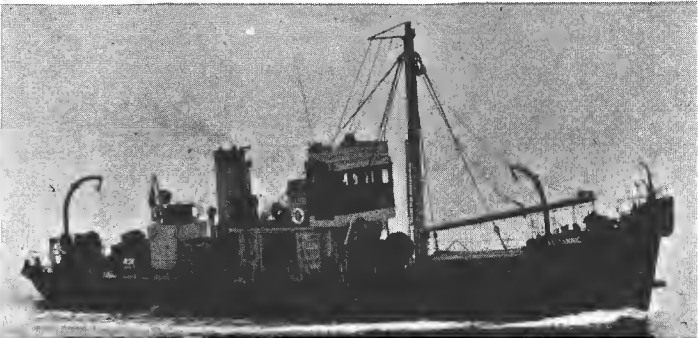
Name	Pennant No.	Laid down	Launched	Completed
GOSSAMER (ex-Miner II)	N 12	22 Dec 38	18 Aug 39	19 Jan 40
MINER III	N 13	18 Jan 39	16 Nov 39	16 Mar 40
BRITANNIC (ex-Miner V)	Ex-N 15	22 Apr 40	2 Nov 40	26 June 41
MINER VI	N 16	22 Apr 41	7 Feb 42	30 May 42
STEADY (ex-Miner VII)	Ex-N 17	31 Mar 43	29 Jan 44	31 Mar 44

Displacement, tons	300 standard; (346 to 355 full load)
Dimensions, feet	110.2 x 26.5 x 8
Main Engines	Ruston & Hornsby diesels; 2 shafts; 360 bhp = 10 knots

All built by Philip & Son Ltd, Dartmouth, and all engined by Ruston & Hornsby Ltd, Lincoln. *Gossamer* is an experimental torpedo trials vessel and is no longer capable of minelaying. *Miner V* was converted into a cable lighter and renamed *Britannic* in 1960. *Miner VII* was adapted as a stabilisation trials ship at Portsmouth and renamed *Steady* in 1960. *Miner III* was a tender for Clearance Diving Teams attached to H.M.S. *Vernon* shore establishment but was relieved by the coastal minesweeper *Laeston* as diving trials ship in 1967. *Miner VI* was torpedo recovery vessel in Malta for the Fifth Submarine Division until it was withdrawn from the Mediterranean in Aug. 1964.

PHOTOGRAPHS

Larger photographs of *Miner V* and *Gossamer* (aerial view) appear in the 1957-58 and earlier editions. A large photograph of *Miner VI* appears in the 1958-59 and 1959-60 editions, and another in the 1960-61 to 1962-63 editions. A port broadside view of *Miner III* appears in the 1963-64 to 1965-66 editions.



BRITANNIC

1967, courtesy Dr Giorgio Arra

DISPOSALS

Of the "Miner" class, *Miner IV* and *Mindful* (ex-Miner VIII), formerly tender to the experimental submarine *Explorer*, were sold in 1965. *Minstrel* (ex-Miner I), formerly accommodation ship for the experimental submarine *Excalibur*, was listed for disposal by scrapping in 1965 and *Miner VI* (see above) in 1966. The controlled minelaying trawler *Redshank* was scrapped in 1958. The controlled minelayer *Penyu* was disposed of in 1959.

The controlled minelayer *Linnet* was sold for scrap in 1964.

TANK LANDING SHIPS

3 LST (3) Type

DIEPPE (ex-LST (3) 3016)	STALKER (ex-LST (3) 3515) TRACKER (ex-LST (3) 3522)
Displacement, tons	2 140 light; 5 000 full load
Dimensions, feet	330 pp; 347.5 oa x 55.2 x 4.7 (forward); 12 (max)
Guns	8—20 mm Oerlikon AA
Main Engines	Triple expansion; 2 shafts; 5 500 ihp = 13 knots (10 knots cruising)
Boilers	2 Admiralty 3-drum type
Oil fuel (tons)	1 400
Complement	115 officers and ratings

Stalker was designated as a submarine support ship in 1958. *Lofoten*, designated as a harbour accommodation ship in 1958, was converted into the Royal Navy's first helicopter support ship in 1964 (see later page). *Tracker*, designated as a harbour accommodation ship in 1958, was converted into a net and boom carrier in 1964. *Dieppe* was designated as a harbour accommodation ship in 1967.

TRANSFER

Sister ship *Avenger* was transferred to the Indian Navy in 1949 and renamed *Magar*.

NOMENCLATURE

When commercially chartered *Charger* became *Empire Nordic*, *Fighter* became *Empire Grebe*, *Hunter* became *Empire Curlew*, *Trouncer* became *Empire Gull*, *Trumpeter* became *Empire Fulmar* and *Walcheren* became *Empire Guillmot*, *Attacker* was renamed *Empire Cymric* on commercial charter in 1954.

DISPOSALS

Smiter was wrecked off Lagos on 25 Apr 1949. *Searcher* was scrapped in 1949. *Bruiser* was stricken in 1959. *Reggio*, *Salerno*, *Suvla* and *Vagso* in 1960, *Puncher* and *Ravager* in 1961, and *Hunter* in 1962. *Chaser*, designated as a submarine support ship in 1958, was listed for disposal in 1962. *Zeebrugge*, employed as a harbour accommodation ship since 1958, was placed on the disposal list in 1963.

DISPOSALS of LST(A) TYPE

Anzio (ex-LST(A) 3003) was officially approved for disposal by scrapping in 1966 (de-equipped ready for tow in 1967) and *Striker* (ex-LST(A) 3516) in 1967. For disposals of the other ships of this class see 1966-67 edition.



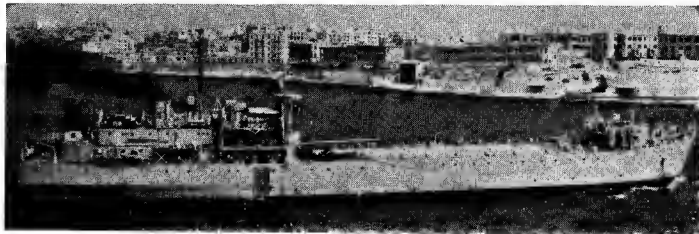
DIEPPE

Added 1960, A & J Pavia

Tank Landing Ships—continued
1 LST (C) Type

NARVIK (ex-LST (C) 3044)
Displacement, tons 2 256 light; 4 980 full load
Dimensions, feet 330 pp; 345 oa × 54 × 4·5 forward; 12·2 max
Beaching draughts 10—20 mm Oerlikon AA
Guns Triple expansion; 2 shafts; 5 500 ihp = 13 knots
Main Engines 2 of the three-drum type
Boilers 1 400
Oil fuel (tons) 105
Complement 150
Could carry 1 LCT, 5 LCA, 15 40-ton tanks, 15 trucks. *Narvik* was flagship of the task force for the nuclear test in Monte Bello Islands in 1956. In 1960 she was fitted out as a submarine support ship at Chatham to relieve the submarine depot ship *Forth* serving the First Submarine Squadron in the Mediterranean and as accommodation ship at Malta. She is now accommodation ship for technical officers and ratings at the Polaris base at Faslane until permanent quarters ashore are completed. Her sister ship *Messina* took part in the nuclear test at Christmas Island in 1956-58, and was converted to an LST (A) in 1960 for service in the Amphibious Warfare Squadron.

PHOTOGRAPHS
A larger photograph of *Narvik* appears in the 1952-53 to 1959-60 editions, and a port bow view in the 1961-62 and 1962-63 editions.
DISPOSALS
Messina (ex-LST (C) 3043) was de-equipped in 1967 ready for tow to shipbreakers. **DISPOSALS OF "BEN" CLASS**
Of the two LST (Q) type tank landing ships, *Ben Nevis* was listed for disposal by scrapping in 1965, and *Ben Lomond* was sold out of the Service in 1960.



NARVIK 1963, A & J Pavia

TANK LANDING CRAFT
12 LCT (8) Type

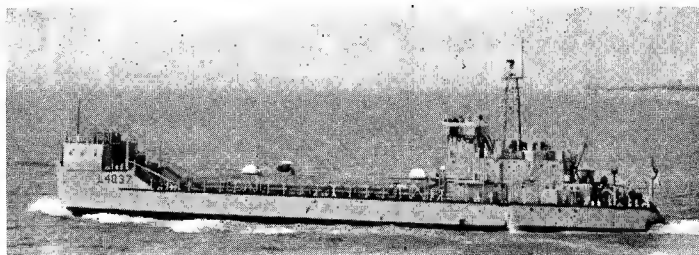
AACHEN L 4062	AKYAB (ex-Rampart) L 4037	AREZZO L 4128
ABBEVILLE L 4041	ANDALNES L 4097	ARAKAN L 4164
AGEDABIA L 4085	ANTWERP L 4074	ARROMANCHES L 4086
AGHEILA L 4002	ARDENNES L 4073	AUDEMER L 4061

Displacement, tons 657 light; 895 to 1 017 loaded
Dimensions, feet 225 pp; 231·2 oa × 39 × 3·2 forward; 5 aft
Beaching draughts 4 Paxman engines; 1 840 bhp = 12·6 knots (9 knots cruising)
Main Engines 33 to 37
Complement

Akyab, *Bastion* and *Redoubt* have lattice mast (see photographs). *Akyab* has deckhouse forward, *Citadel* and *Portcullis* were to have been converted to Fleet Degaussing vessels. *LCT* (8) 4002 (*Agheila*), 4037 (*Akyab*, ex-Rampart), 4041 (*Abbeville*), 4061 (*Audemmer*), 4062 (*Aachen*), 4073 (*Ardenness*), 4074 (*Antwerp*), 4085 (*Agedabia*), 4086 (*Arromanches*), which has a large lattice mast forward, 4097 (*Andalnes*), 4128 (*Arezzo*) and 4164 (*Arakan*) were transferred to the War Office.

PHOTOGRAPHS. A photograph of *Arromanches* appears in the 1960-61 and 1961-62 editions.

DISPOSALS. *LCT* (8) 4042, 4045, 4050, 4148, 4156 and 4165 were stricken from the list in 1958, and 4025, 4049, 4063 and 4098 in 1960. *LCT* (8) 4063, *Jawada*, on loan to a commercial company, was for disposal at Bahrein. *Redoubt*, L 4001, and *Sallyport*, L 4064, were listed for disposal by scrapping in 1965. *Counter Guard*, L 4043, was sold to Malaysia in 1965 and renamed *Sri Langkawi*. *Buttress*, L 4099, was sold to France in July 1965 and renamed L 9061. *Parapet*, L 4039, was sold to La Société Maseline Ltd (Merchants), Sark, in 1966. *Bastion*, L 4040, was sold to Zambia on 15 Sep 1966. *Citadel*, L 4038, and *Portcullis*, L 4044, which were to have been converted into fleet degaussing vessels, were still in the Spring 1967 Navy List.



AKYAB, ex-Rampart (deckhouse forward) 1965, Dr Giorgio Arra



AUDEMER 1967, Skyfotos

Tank Landing Craft—continued
14 LCM (9) Type

LCM (9) 700	LCM (9) 703	LCM (9) 706	LCM (9) 710
LCM (9) 701	LCM (9) 704	LCM (9) 707	LCM (9) 711
LCM (9) 702	LCM (9) 705	LCM (9) 708	LCM (9) 3507
		LCM (9) 709	LCM (9) 3508

Displacement, tons 75 light; 176 loaded
Dimensions, feet 77 pp; 85 oa × 21·5 × 5·5
Capacity 2 battle tanks or 100 tons of vehicles
Main Engines 2 Paxman 6 cyl. YHXAM diesels; 2 shafts; 624 bhp = 10 knots
Screws enclosed in Kort nozzles to improve manoeuvrability.

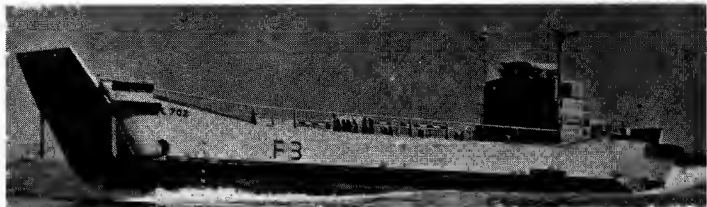
LCM (9) 3507 and LCM (9) 3508 were the first operational minor landing craft to be built since the Second World War. Ramped in the traditional manner forward, a completely enclosed radar-fitted wheelhouse is positioned aft. Upon completion they carried out familiarisation trials to perfect the new techniques required in launching and recovering LCMs from the flooded stems of the parent assault ships. Four each of the 700 Series allocated to assault ships.

CONSTRUCTION. The prototype, L 3507, was laid down in Apr. 1962 and accepted on 19 Mar 1963. L 3508 was begun in May 1962 and handed over on 6 June 1963. Both built by Vosper Ltd, Portsmouth. Twelve more of these craft have since been built, 700, 701, 702 and 703 by Brook Marine Ltd, Lowestoft (launched in 1965), 704, 705, 706, 707, 708 and 709 by Richard Dunston Ltd, Thorne (launched in 1965-66), and 710 and 711 by J. Bolton & Sons, Ltd, Poole (launched in Oct 1966).

DESIGN. A new type of Landing Craft Mechanized for operation with the Assault Ships recently built for the Royal Navy. Designed by Vosper Ltd in collaboration with the Royal Navy. The design was evolved as the result of the most exhaustive tank trials ever carried out on a landing craft. Scale models were made and operated by remote control in the Admiralty Experiment Works test tank at Haslar, using simulated wave conditions to prove the design in the roughest possible sea conditions, resulting in a design incorporating new standards of landing craft stability.

ENGINEERING. The Davey Paxman diesels are of the A6YHXAM type, the shafts being geared by a Vee-drive to enable the propulsion machinery to be placed as far aft as possible, an arrangement which provides a clear well deck for tanks and heavy transport carried in the new assault ships.

STEERING. Fitted with Kort rudders, which consist of a swivelling ring surrounding each of the two propellers and which replace conventional rudders. The Kort rudders produce more precise steering and control when going ahead or astern. The ring enclosing each propeller also provides protection when beaching in shallow water during disembarkation or recovery of tanks and heavy transport.



L 702 (F3) 1967, Wright & Logan

11 MRC (Ex-LCT)

CANA (MRC 1109)	MEDWAY (MRC 1110)	SIMBANG (MRC 1100)
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Maintenance and Repair Craft, former Tank Landing Craft, *Cana*, rated as Naval Servicing Craft (Engineering) was in Singapore reserve, now for disposal. *Medway* (see photograph on page 280, 1966-67 edition) a Submarine Support Ship, was base ship Seventh Submarine Division, until relieved by *Forth* in 1966. *Simbang*, nominal depot ship, R.N. Air Station, Singapore. Also MRC 1013, 1015, 1023, 1097, 1098, 1119 (for disposal), 1120, and 1413 (ex-LCT (E) 413) used as a power and workshop, Malta, MRC 1122 was sold to Ghana in July 1965 and renamed *Asuantsi*.

5 LCM (7) 7,000 Series (and NSB)

Displacement, tons 28 light; 63 loaded
Dimensions, feet 60·2 × 16 × 3·7
Main Engines 290 bhp = 9·8 knots

Nos 7016, 7037, 7087, 7100, 7104. Three are employed as naval servicing boats and store carriers: 7037 (NSB 351), 7100 (NSB 359), 7104 (NSB 358). Some of the LCM (7) type were re-engined with Gray Marine diesels.

40 LCVP 100 Series and 1,000 Series

Displacement, tons 8·5 light; 13·5 full load; LCVP (ex-LCA (2)s 11·5 light; 16 full load
Dimensions, feet 41·5 LCVP (2)s; 43 × 10 × 2·5
Main Engines 130 bhp = 8 knots; LCVP (2)s: 2 Foden diesels, 200 bhp = 10 knots

There are 38 LCVP (2)s Nos 101 to 146 and 2 LCVP (1)s, Nos 1485 and 1700. There were also a number of variations and prototypes of about the same length (43 feet). Raising Landing Craft, including LCR 5507 and 5508, and Navigational Landing Craft, including LCN 604 (ex-LCR 5505). LCA (1) 1275, 1330, 1481, 1485, 1644, 1678, 1705, 1712, 1733, 1745, 1779 and 1787 were for disposal in 1961, eleven more in 1963, and 1272, 1543, 1639, 1972 and 1891 in 1964. LCVP (2)s carried by *Intrepid* and *Fearless* can carry 35 troops or 2 Land Rovers. Crew 4. LCA (2)s were redesignated LCVPs (Landing Craft Vehicle and Personnel) in 1966.

4 LCP (L) and LCP (L) 3 500 Series

Displacement, tons 6·5 light; 10 loaded
Dimensions, feet 37 × 11 × 3·2
Main Engines 225 bhp = 12 knots

There are 2 LCP (L)s, Nos 556 and 559, see details above, and two LCP (L) 3s Nos 502 and 503. Aurora gas turbines were installed in LCP (L) 3 No 502.

FAST PATROL BOATS

2 "Brave" Class

(Gas Turbine Type Convertible Torpedo Gunboats)

BRAVE BORDERER P 1011

BRAVE SWORDSMAN P 1012

Displacement, tons	89 standard; 114 full load
Dimensions, feet	90 wl; 96 hull; 98.8 oa x 25.5 x 7 props
Armament	As MGB: 2—40 mm single guns in power operated mountings; 2—21 inch side launched torpedoes
Main Engines	As MTB: 4—21 inch torpedoes; 1—40 mm gun 3 Bristol Siddeley Proteus 1250 gas turbines; 3 shafts; 10 500 shp = 52 knots max, 46 knots continuous. Fixed pitch propellers 1 700 rpm
Fuel capacity, tons	25
Complement	20 (3 officers, 17 ratings)

Built by Vosper Ltd, Portsmouth. The hull is framed in welded aluminium with double skinned planking of mahogany and sheathed with glass fibre below the waterline. A hydraulic operated flap fitted on the transom maintains the running trim. Very beamy in relation to length, the ratio being less than 1.4 only. *Brave Borderer*, was launched on 7 Jan 1958 and accepted on 26 Jan 1960. Cost: £880,000. *Brave Swordsman* was launched on 22 May 1958 and was handed over on 20 July 1960. Cost: £640,000.

ENGINEERING. Powered with Proteus gas turbines, originally designed for aircraft use, but adapted for marine purposes by Bristol Siddeley Engines Ltd, Filton, in association with W H Allen, Sons & Co Ltd, Bedford, who supplied the primary reduction gears and the reverse reduction gearboxes. Rover gas turbines driving Metro-Vickers 40 kw generators provide electrical power. No diesel machinery. Both Proteus and Rover turbines run on diesel fuel. Authorised maximum rating of Proteus is 3 500 shp and maximum continuous rating 2 800 shp. A striking feature is that with the primary reduction gearbox the Proteus gives one hp for every 0.83 lbs of its weight, and including the reverse reduction gearbox, one hp for every 1.6 lbs of its weight. Designed for offensive operations against enemy warships and merchant ships in coastal, inshore and shoal waters, where high speed is essential. The propellers are relatively small and of high speed. This was a novel and unusual feature resulting from joint research carried out by the Royal Navy and Vosper Ltd, using the firm's cavitation tunnel. Gas turbines give an increase of 35 per cent in total power combined with a reduction of 50 per cent in machinery and a saving of 25 per cent in machinery space.

ELECTRICAL. The electrical system incorporates experimental light weight equipment designed and installed by Vosper Ltd, to make an overall contribution to weight reduction. The generators comprise two Rover gas turbines, each of 40 kW.

DESIGN. The design studies were carried out by Vosper with Royal Navy departments and co-ordinated by the Director General, Ships, whose extensive research facilities were available at all stages in design. Both craft underwent extensive evaluation trials and the design proved to be very satisfactory.

ARMAMENT. The originally designed armament, functioning as Motor Gun Boats, comprised one 3.3 inch turret mounted gun specially developed for these craft, with a stabilisation system capable of dealing with the motion experienced in such high speed craft. With the 3.3 inch gun was one 40 mm gun and two 21 inch torpedoes.

FUNCTIONAL. In addition to their roles as gunboats or torpedo boats these craft can also be employed as minelayers or high speed raiding craft for Commandos.

EXPERIMENTAL. Both were initially in the Coastal Forces Trials and Special Service Squadron, based at H.M.S. *Dolphin II*, formerly H.M.S. *Hornet*, shore headquarters at Gosport.

FISHERY PROTECTION. In Aug 1962 both were attached to the Fishery Protection Squadron in British waters to achieve greater surprise in areas where poaching was likely, a role for which with their high speed they are eminently suitable.

PHOTOGRAPHS. Photographs as torpedo boats (carrying four torpedoes) appear in the 1960-61 to 1962-63 editions (*Brave Borderer*) and 1961-62 and 1962-63 editions (*Brave Swordsman*). A starboard broadside view of *Brave Swordsman* as gunboat (two torpedoes) at speed appears in the 1963-64 to 1966-67 editions.



BRAVE BORDERER

1964, Skyfotos



BRAVE BORDERER and BRAVE SWORDSMAN

1967, Official

Fast Patrol Boats—continued

5 "Dark" Class

(Convertible Motor Torpedo Boats and Motor Gunboats)

DARK ADVENTURER P 1101

DARK HERO P 1115

DARK HUSSAR

DARK GLADIATOR P 1114

DARK INTRUDER P 1118

P 1112

Displacement, tons	50 standard; 70 full load
Dimensions, feet	67 wl; 71.5 oa x 19.8 x 6.1 max
Armament	As MGB: 1—4.5 inch gun; 1—40 mm AA gun (or 2—40 mm AA guns) As MTB: 4—21 inch torpedo tubes; 1—40 mm AA
Main Engines	2 Napier Deltic diesels; 5 000 shp = 46 knots (designed); 35 to 37 knots sea speed
Fuel capacity (tons)	8
Complement	15

Of composite construction, aluminium alloy being used for the framing and deck. Hulls are painted black. Cost £325,000 to £338,000 each. The design was not entirely successful. The boats were overweight, and it was not possible to develop full engine power owing to vibration, unsatisfactory propellers, and intake and exhaust restrictions.

ENGINEERING. A new design of diesel machinery which for its power was the lightest unit so far designed. The Napier Deltic, an opposed piston two-stroke engine, of high performance, constructed in triangular form with three crankshafts, an arrangement new to engineering. It was designed and developed for the Royal Navy by D. Napier & Son Ltd, London, on behalf of their parent company, the English Electric Company Ltd. The type 18-11B develops 2 500 shp at 2 000 rpm. The engine and reverse gear weighs only 10 500 lbs and therefore gives one hp for every 4.2 lbs of its weight. This is the best power-weight ratio ever achieved in a marine diesel. All power is provided by diesel machinery. A Foden FD 4 two-stroke diesel drives the 35 kw. auxiliary generator set and bilge pump.

FUNCTIONAL. Can also be employed as minelayers (see photograph of *Dark Antagonist*).

EXPERIMENTAL. Unlike earlier craft, of composite wood planking on aluminium framing, *Dark Scout*, last of the 18 boats, built by Saunders-Roe (Anglesey) Ltd, Beaumaris, was of all-welded aluminium throughout. The hull was of hard chine form, developed to give good seagoing qualities with high maximum and cruising speeds.

CLASS. Five boats of the "Dark" type were purchased by Burma, and two by Finland.

PHOTOGRAPHS

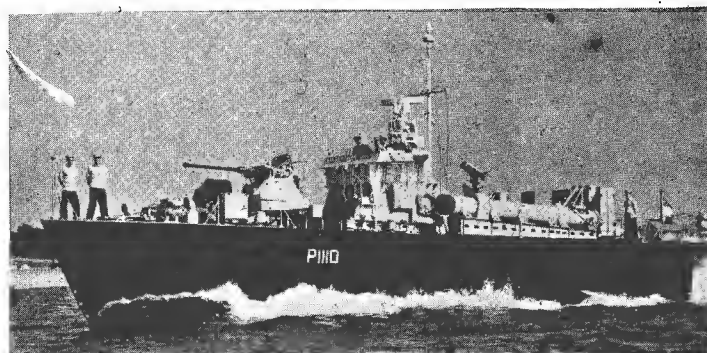
A photograph of *Dark Hussar* appears in the 1959-60 edition, of *Dark Adventurer* (as gunboat) in the 1955-56 to 1958-59 editions.

CANCELLATION. The construction of the 19th boat, *Dark Horseman*, was abandoned.

DISPOSALS. *Dark Aggressor*, *Dark Avenger*, *Dark Biter*, *Dark Hunter*, *Dark Killer*, *Dark Rover* and *Dark Scout* have been disposed of. *Dark Adventurer*, *Dark Antagonist*, *Dark Buccaneer*, *Dark Clipper*, *Dark Fighter*, *Dark Gladiator*, *Dark Hero*, *Dark Highwayman*, *Dark Hussar*, *Dark Intruder* and *Dark Invader* were still in the Spring 1967 Navy List, but are scheduled to be scrapped except the five listed above, of which *Dark Adventurer*, *Dark Hero*, *Dark Hussar* and *Dark Intruder* are on the sales list. The latter was in commission in 1966 and *Dark Gladiator* was in commission in 1967.

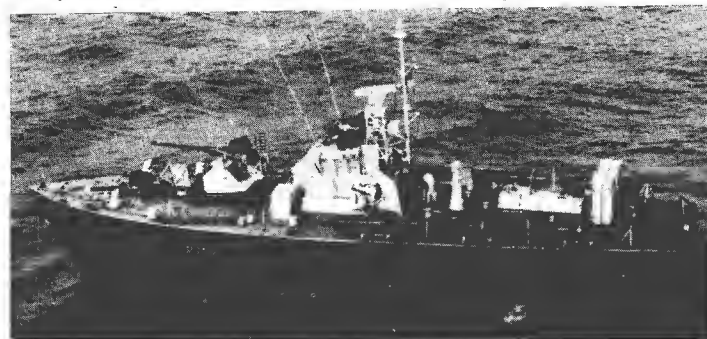
DISPOSALS of "BOLD" CLASS. *Bold Pathfinder* was disposed of in 1962 and *Bold Pioneer* in 1958.

DISPOSALS of "GAY" CLASS. *Gay Bruiser*, *Gay Centurion*, *Gay Dfagoon* and *Gay Forester* were on the sales list in 1961. *Gay Archer*, *Gay Bombardier*, *Gay Bowman*, *Gay Caribineer* and *Gay Cavalier*, were on the disposal list in 1963, and *Gay Charger*, *Gay Charioteer* and *Gay Fencer*, latterly employed as fast target towing boats, were still in the Spring 1967 Navy List.



DARK HIGHWAYMAN

1960, Wright & Logan



DARK ANTAGONIST (carrying 6 ground mines)

Added 1960, Official

FEROCITY

In June-July 1967 the Royal Navy found it necessary to charter for three weeks the Vosper fast patrol boat *Ferocity* while one of the "Brave" class fast patrol boats was being overhauled, and she was temporarily commissioned into the Royal Navy as H.M.S. *Ferocity*. Built as a private venture in 1960, her particulars are:— 75 tons standard, 85 full load; length 88 feet pp, 90.7 oa; beam 22 feet; 2 Bristol Siddeley Proteus gas turbines, 8 500 bhp = 50 to 54 knots (2 diesels, 400 bhp for cruising and manoeuvring); armed with 4—21 inch torpedoes and 1—40 mm gun (or 2 torpedoes and 2 guns).

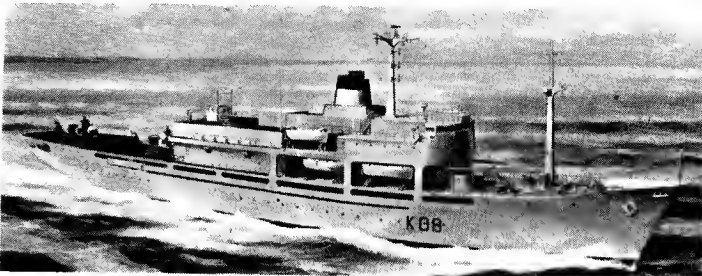
HELICOPTER SUPPORT SHIPS

1 New Construction

ENGADINE K 08

Displacement, tons *circa* 8 000 (official figure)
Dimensions, feet 424 oa x 58

Projected under the 1964-65 Navy Estimates. Under construction by Henry Robb Ltd, Leith. Officially named on 15 Sep 1966 (high winds caused postponement of the launching ceremony). Largest ship so far to be built by the company. Intended for the training of helicopter crews in deep water operations against submarines.



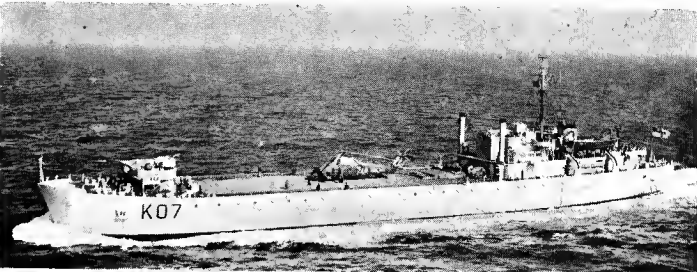
ENGADINE (artist's impression) 1966 Official

1 Converted LST (3) Type

LOFOTEN (ex-LST (3) 3027) K 07
Displacement, tons 2 140 light; 4 820 full load
Dimensions, feet 330 pp; 347.5 oa x 55.2 x 12 max
Main Engines Triple expansion; 2 shafts; 5 500 ihp = 13 knots
Boilers 2 Admiralty 3-drum type

The Royal Navy's first helicopter support ship, commissioned after conversion on 23 June 1964. Specially selected for economy and simplicity of conversion, her upper deck was stripped and reinforced to provide a miniature flight deck, and helicopter support facilities installed. Can carry up to six Wessex helicopters. She provides a forward position and her helicopters are able to operate at greater ranges from their main support base. She constitutes a trial ship in which the lessons learned in operation are useful in the conversion of the "Tiger" class cruisers as helicopter carriers and in the construction of the new helicopter support ship.

PHOTOGRAPHS
A larger photograph of *Lofoten*, L 3027, a port bow oblique aerial view showing helicopter on board, appears in the 1964-65 edition.



LOFOTEN (first helicopter support ship) 1965. Official

SEAWARD DEFENCE BOATS

7 "Ford" Class

ABERFORD P 3102	BRYANSFORD P 3106	DUBFORD P 3119
BECKFORD P 3104	DROXFORD P 3113	GIFFORD P 3111
		KINGSFORD P 3117

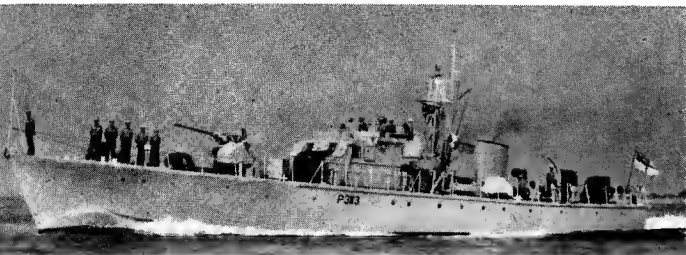
Displacement, tons 120 standard; 160 full load
Dimensions, feet 110 wl; 117.2 oa x 20 x 7 props
Guns 1—40 mm Bofors AA (none in *Ickford*)
A/S weapons DC rails and large and small DC
Main Engines Davey Paxman diesels. Foden engine on centre shaft.
1 100 bhp = 18 knots max; 15 knots continuous sea
Oil fuel (tons) 23
Complement 19

Designed to detect, locate and destroy submarines, including midget submarines, in the approaches to defended ports. All built in 1953-57. Modern electronic equipment, depth charge release gear and flares. Comprehensive electrical installations. *Droxford* is attached to H.M.S. *St Vincent*.

ROYAL NAVAL RESERVE. *Dubford* is attached to Clyde Division, *Beckford* and *Kingsford* were transferred to Mersey and Clyde divisions, respectively, in Dec 1964.

TRANSFERS
Brayford was sold to South Africa in 1954 and *Glassford* in 1955. *Desford* was transferred to Ceylon in 1955. *Elmina* and *Komenda* were built for Ghana in 1962. *Axford* *Hinksford* and *Montford* were sold to Nigeria 1 July 1966.

DISPOSALS. *Camberford*, *Greatford*, *Ickford*, *Marlingford*, *Mayford*, *Shalford* and *Tilford* were officially approved for disposal by scrapping during 1966-67.



DROXFORD 1967, Wright & Logan

CANCELLATION. The construction of the projected multi-purpose icebreaker, patrol ship, survey vessel and scientific support ship, *Terra Nova* was cancelled in 1966 (see full particulars and artist's impression in the 1964-65 to 1966-67 editions).

COASTAL SURVEY CRAFT

4 "Fawn" Class. New Construction

BEAGLE	BULLDOG	FAWN	FOX
Displacement, tons	800 approx (official figure)		
Dimensions, feet	189 oa x 37.5 x 12		
Main Engines	4 Lister Blackstone ERSBM, 8 cyl. 4 str. diesels, coupled to 2 shafts, 2 000 bhp = 15 knots max designed, controllable pitch propellers		
Range, miles	4 000 at 12 knots cruising		
Complement	38 (4 officers, 34 ratings)		

A new class of coastal survey ships planned for the charting and re-charting of shallow waters. Designed for duty overseas, working in pairs. *Fawn* and *Fox* are to replace the coastal minesweeper conversions.

The names originally allocated were *Albacore*, *Albatross*, *Barracouta*, *Bulldog*, *Fawn* and *Fox*, but these were changed in 1965 to *Beagle*, *Bulldog*, *Fawn*, *Fox*, *Pelican* and *Porcupine*, and the two latter were cancelled in 1967.

The first ship of the class to be launched was *Bulldog* on 12 July 1967 at Brooke Marine Ltd, Lowestoft. Built to commercial standards, Lloyd's class 100 A1 and additionally to naval standards where applicable. Fitted with passive tank stabilizer to reduce rolling, most modern echo sounders, precision ranging radar, Decca "Hifix" system, automatic steering. Air conditioned throughout. Carries 28.5 ft survey motor launch in davits. Capable of hydrographic survey anywhere in the world. Designed for maximum habitability. Scheduled to be in service early in 1968.

Beagle was launched on 4 Sep 1967

2 "Ton" Class.

Modified Coastal Minesweepers

MERMAID (ex- <i>Sullington</i>) A 154	MYRMIDON (ex- <i>Edderton</i>) A 151
Displacement, tons	360 standard; 420 full load
Dimensions, feet	153 oa x 28.8 x 8.5
Main Engines	Diesels; 2 shafts; 3 000 bhp = 15 knots
Endurance, miles	2 300 at 13 knots
Complement	26 (3 officers, 23 ratings)

After conversion into survey ships these two former coastal minesweepers of the "Ton" class commissioned for service on 17 and 20 July 1964, respectively, for hydrographic work in home waters. See photographs at bottom of page 318.

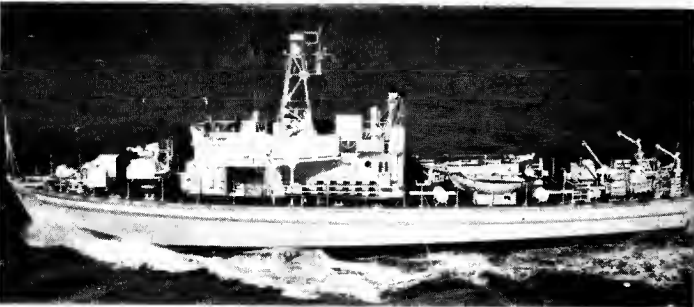
INSHORE SURVEY CRAFT

3 "E" Class

ECHO A 70	EGERIA A 72	ENTERPRISE A 71
Displacement, tons	160	
Dimensions, feet	100 pp; 106 B oa x 22 x 5.6 fwd, 6.8 aft	
Main Engines	2 Paxman diesels; 2 shafts; Controllable pitch propellers	
	700 bhp = 14 knots max; 12 knots normal	
Oil fuel (tons)	15	
Endurance, miles	1 600 at 10 knots	
Complement	1B (2 officers, 16 ratings)	
Accommodation	22 (4 officers, 1B ratings)	

Echo, the first Inshore Survey Craft, was launched by J Samuel White & Co Ltd, Cowes, on 1 May 1957, and commissioned on 12 Sep 1958. *Egeria* was built by Wm Weatherhead & Sons Ltd, Cockenzie, and *Enterprise* by M W Blackmore & Sons Ltd, Bideford. Of all-wood construction with glued laminated members. *Echo*'s main machinery manufacturers were Davey Paxman & Co Ltd, Colchester. No armament; but was fitted with a 40 mm gun for trials (see photograph below) and retains her gun seat. In wartime she could be used as an armed inshore minehunter on which her design was based. All built for coastal and harbour hydrographic surveys around the British Isles. Ability to navigate in shoal water, to obtain depths and detect wrecks on the sea bed, and to fix the position with accuracy. Equipped with two echo sounding machines and sonar for wreck location, and survey equipment for triangulation ashore. Modern radar, wire sweep gear, echo sounding launch, and modern chart room.

PHOTOGRAPHS
A larger photograph of *Echo*, without armament appears in the 1959-60 edition.



ECHO (as built with gun) Added 1960, Official

2 "Ham" Class.

Modified Inshore Minesweepers

WATERWITCH (ex- <i>Powderham</i>) M 304	WOODLARK (ex- <i>Yaxham</i>) M 2780
Displacement, tons	120 standard; 160 full load
Dimensions, feet	107.5 oa x 22 x 5.5
Main Engines	Diesels; 2 shafts; 1 100 bhp = 14 knots
Endurance, miles	1 500 at 12 knots
Complement	18 (2 officers, 16 ratings)

Former inshore minesweepers of the "Ham" class converted to replace the old survey motor launches *Meda* and *Medusa* for operation in inshore waters at home. See photograph of *Woodlark* (ex-*Yaxham*) at the bottom of Col. 1, Page 319.

FLEET SUPPLY SHIPS

3 New Construction Stores Support Ships (AFS)

LYNESS A 339 Displacement, tons Measurements, tons Dimensions, feet Aircraft Main Engines Complement	STROMNESS A 344 <i>circa</i> 16 500 laden (official figure) 12 359 gross; 4 744 net; 7 782 deadweight 490 pp; 524 oa x 72 x 25 5 Facilities for helicopters Wallsend-Sulzer 8-cyl. RD.76 diesel; 12 000 bhp 20 knots 184	TARBATNESS A 345 Ordered on 7 Dec 1964. Designed and built by Swan Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne to meet specific requirements. All fitted with Sulzer type main machinery remotely controlled, and auxiliary machinery manufactured by Wallsend Slipway & Engineering Co Ltd. Lifts and mobile appliances provided for handling stores internally, and a new replenishment at sea system and a helicopter landing platform for transferring loads at sea. A novel feature of the ships is the use of closed circuit television to monitor the movement of stores. All air-conditioned. <i>Lyness</i> was launched on 7 Apr 1966, <i>Stromness</i> on 16 Sep 1966, and <i>Tarbatness</i> on 27 Feb 1967. <i>Lyness</i> was completed on 22 Dec 1966, <i>Stromness</i> on 21 Mar 1967.
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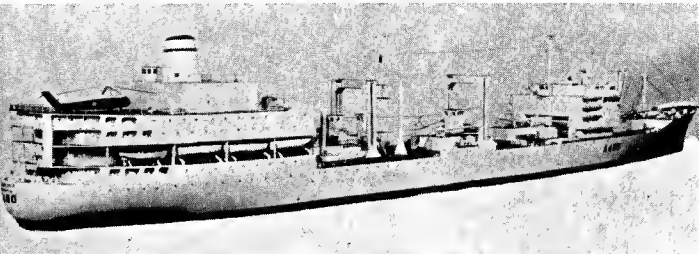


S T R O M N E S S 1967. Official

2 New Construction Replenishment Ships

REGENT A 486 Displacement, tons Dimensions, feet Aircraft Guns Main Engines Complement	RESOURCE A 480 19 000 full load (deep departure) 640 oa x 77 2 1 Wessex helicopter embarked 2-40 mm Bofors (single) Steam turbines (by Associated Electrical Industries) 119 R.F.A. service and Merchant Navy officers and ratings. 52 Navy Department industrial and non-industrial civil servants; 11 Royal Navy (1 officer and 10 ratings) for helicopter flying and maintenance.
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It was officially announced on 24 Jan. 1963 that two 19 000-ton replenishment ships would be ordered. On 13 Aug. the builders were named: Scott's Shipbuilding & Engineering Co, Greenock, and Harland & Wolff, Belfast. They have lifts for armaments and stores, and helicopter platforms for transferring loads at sea. Designed from the outset as Fleet Replenishment Ships (previous ships have been converted merchant vessels). Air conditioned. *Resource* was launched at Greenock on 11 Feb 1966. *Regent* was launched at Belfast on 9 Mar 1966.



R E S O U R C E 1966. Official

1 Air Stores Support Ship

RELIANT (ex-Somersby) A 84
Displacement, tons
Measurement, tons
Dimensions, feet
Main Engines
Complement

4 447 light as built; 13 737 full load
9 290 deadweight (summer), 8 460 gross
440 pp; 468 8 oa x 61-5 x 26 2
Doxford 6 cyl. diesel; 8 250 bhp = 18 knots
110 officers and men

Built by Sir James Laing & Sons Ltd, Sunderland. Launched on 9 Sep 1953. Engined by Hawthorn Leslie. Completed in 1954. Former grain carrier which traded for two years, working between the Gulf of Mexico and the United Kingdom, before purchase from the Ropner Shipping Company. Converted for her new role at North Shields. Sailed from Chatham on 4 Nov 1958 for the Far East as the Royal Navy's first air victualling stores issuing ship capable of replenishing aircraft carriers at sea. Has an endurance of 50 days steaming at 16 knots, and carries 40 000 different patterns of aircraft spares and general naval stores. Has six holds and the latest automatic tensioning winch for transfer of stores to aircraft carriers in unfavourable weather. Fully air-conditioned for service in the tropics. Her conversion was based on the concept that aircraft carriers should be able to spend more time at sea, independent of shore bases. Originally named *Somersby*. Renamed *Reliant* in 1958. As refitted she has a helicopter landing platform built over the poop deckhouse with netting surrounds.



R E L I A N T 1967, A & J Pavia

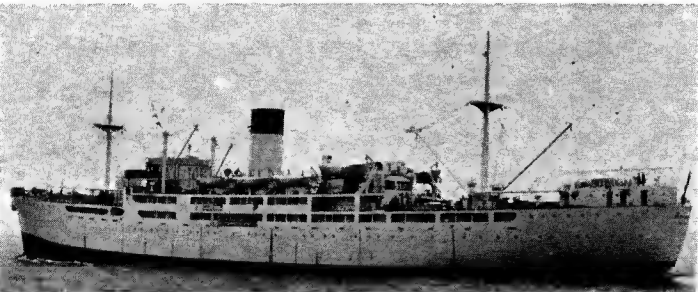
Fleet Supply Ships—continued
2 Fleet Replenishment Ships

RESURGENT (ex-Changchow) A 280 Displacement, tons Measurement, tons Dimensions, feet Main Engines Oil fuel (tons)	RETAINER (ex-Chungking) A 329 14 000 (approx) official estimate <i>Resurgent</i> 9 511 gross; <i>Retainer</i> 9 301 gross 451 pp; 477 2 oa x 62 x 29 max Doxford diesel; 1 shaft; 6 500 bhp = 15 knots 925
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Former passenger and cargo motor vessels, both built for the China Navigation Co by Scott's Shipbuilding and Engineering Co Ltd, Greenock, and completed in 1951 and 1950, respectively. *Retainer* was formerly a passenger and cargo liner along the China coast. She was purchased in 1952 and converted into a naval storeship during autumn 1954-April 1955 by Palmers Hebburn Co Ltd, where further conversion was carried out Mar-Aug 1957 to extend her facilities as a stores ship, including the fitting out of holds to carry naval stores, the installation of lifts for stores, the provision of extra cargo handling gear and new bridge wings. *Resurgent* was taken over on completion for employment as a fleet replenishment ship.



R E S U R G E N T 1966, courtesy Dr Ian S Pearsall



R E T A I N E R Added 1966, Wright & Logan

6 "Fort" Class

FORT CHARLOTTE A 236 FORT DUNVEGAN A 160 FORT DUQUESNE A 229	FORT LANGLEY A 230 FORT ROSALIE A 186 FORT SANDUSKY A 316
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Displacement, tons
Measurement, tons
Dimensions, feet
Main Engines
Boilers

3 700 light; 9 788 normal (14 000 full load)
10 300 deadweight; 7 201 to 7 332 gross
416 pp; 424 5 wl; 441-5 oa x 57 x 27
Triple expansion; 2 500 ihp = 11 knots
2 Babcock & Wilcox

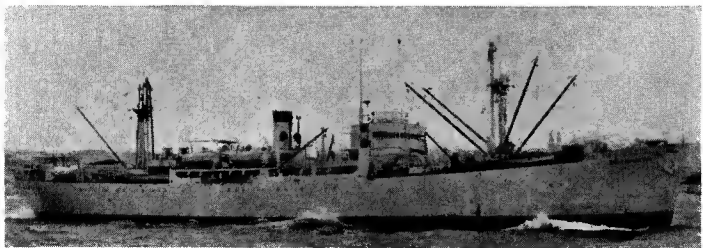
All launched in 1944. *Fort Charlotte* and *Fort Dunvegan* are Stores Support Ships. *Fort Duquesne* (helicopter landing platform aft) is an Air Stores Support Ship. *Fort Langley* *Fort Rosalie* and *Fort Sandusky* are Armament Support Ships. Rated as Royal Fleet Auxiliaries. Similar in type to the Maintenance Ships of the "Mull" and "Head" Classes, see earlier page.

PHOTOGRAPHS. A photograph of *Fort Dunvegan* appears in the 1960-61 to 1966-67 editions.

DISPOSALS. *Fort Beauharnois* and *Fort Constantine* were stricken from the list in 1963.



F O R T S A N D U S K Y 1966, A & J Pavia

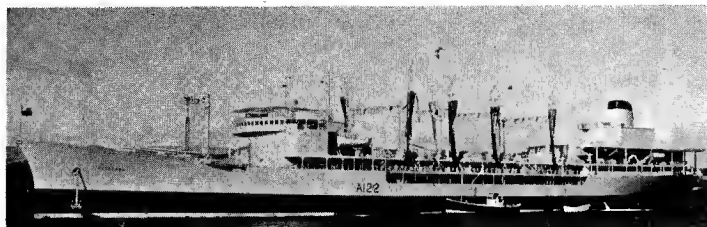


F O R T D U Q U E S N E 1967, A & J Pavia

FLEET REPLENISHMENT OILERS

Name	No	Builders	Launched	Completed
OLEANDER	A 124	Swan Hunter, Wallsend	19 Nov 1964	18 Oct 1965
OLNA	A 123	Hawthorn Leslie, Hebburn	28 July 1965	1 Apr 1966
OLWEN (ex- <i>Olynthus</i>)	A 122	Hawthorn Leslie, Hebburn	10 July 1964	21 June 1965
Displacement, tons	10 890 light; 33 240 full load			
Measurement, tons	22 350 deadweight; 18 600 gross			
Dimensions, feet	611.1 pp; 648 oa x 84 x 34			
Aircraft	2 Wessex helicopters (can carry 3)			
Main Engines	Pametrada double reduction geared turbines; 26 500 shp = 19 knots; 21.2 on trials			
Boilers	2 Babcock & Wilcox, 750 lbs sq in, 950 deg F			
Complement	87 (25 officers and 62 ratings)			

Largest and fastest ships to join the Royal Fleet Auxiliary Service. Of an entirely new class designed by Hawthorn Leslie and Swan Hunter to meet specified requirements. Machinery for *Oleander* was manufactured by Wallsend Slipway & Engineering Co Ltd, and for *Olna* and *Olynthus* by Hawthorn Leslie (Engineers) Ltd. Designed for support of the Fleet, they are fitted with handling gear for transferring fuels and stores by jackstay and derricks whilst steaming at speed. A helicopter landing platform and hangar are provided to enable helicopter carrying ships to collect stores by air. Sophisticated machinery control systems are incorporated, including bridge control of ahead revolutions. Specially strengthened for operations in ice. Accommodation of a very high standard is fully air conditioned. Additionally, *Olna* is fitted with a transverse bow thrust unit for improved manoeuvrability in confined waters and with a new design of replenishment at sea system. *Olynthus* was renamed *Olwen* in Sep. 1967 to obviate confusion with *Olynthus* submarine, in correspondence and by telephone. The 22 year old *Olna* A216, was sold to Spanish ship-breakers in Jan 1967.

OLWEN (ex-*Olynthus*) 1966, courtesy Dr Ian S Pearsall

2 Later "Tide" Class

TIDESPRING A 75	TIDEPOOL A 76
Displacement, tons	8 531 light; 25 931 full load
Measurement, tons	17 400 deadweight; 14 130 gross
Dimensions, feet	550 pp; 583 oa x 71 x 32
Main Engines	Double reduction geared turbines; 15 000 shp = 17 knots
Boilers	2 Babcock & Wilcox
Complement	115 (30 officers and 85 ratings)

Built by Hawthorn Leslie, Hebburn. The machinery was installed by Hawthorn Leslie (Engineers) Ltd. Highly specialised ships for the fuelling (13 000 tons cargo fuel) and storing of naval vessels at sea and capable of high performance under rigorous service conditions. Their all-round capability is enhanced by the provision of a helicopter landing platform and hangar. *Tidespring* was laid down on 24 July 1961, launched on 3 May 1962, and accepted into service on 18 Jan 1963. *Tidepool* was laid down on 4 Dec 1961 and launched on 11 Dec 1962. A photograph of *Tidespring* appears in the 1963-64 to 1966-67 editions.

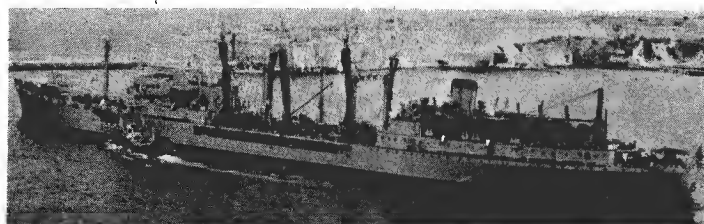


TIDEPOOL 1967, Official

3 "Tide" Class

TIDEFLOW (ex- <i>Tiderace</i>) A 97	TIDESURGE (ex- <i>Tiderange</i>) A 98	TIDEREACH A 96
Displacement, tons	9 040 light; 25 940 full load	
Measurement, tons	16 900 deadweight; 13 700 gross	
Dimensions, feet	550 pp; 583 oa x 71 x 32 max.	
Main Engines	Double reduction geared turbines; 15 000 shp = 17 knots	

Tidereach, launched by Swen, Hunter & Wigham Richardson Ltd, Wallsend-on-Tyne, on 2 June 1954, and completed on 30 Aug 1955, was the first of the new Fleet Replenishment Tankers. The main machinery was manufactured by the Wallsend Slipway Co. Designed for the support of the Fleet and replenishment under way at sea. Capacious (15 000 tons of fuel cargo) and fitted with modern handling gear for transferring food, stores, ammunition, oil and jet aircraft fuels by jackstay and derricks. Oil cargo can be discharged at high rate to ships on either beam or astern, while steaming at speed. *Tiderange* (renamed *Tidesurge*) in 1958 was launched at I. L. Thompson & Sons Ltd, Sunderland, on 30 Aug 1954, the main machinery of both being manufactured by North Eastern Marine Engineering Co Ltd, Wallsend. A fourth ship, *Tide Austral*, built for Australia, was renamed *Supply* on 7 Sep 1962. A photograph of *Tidereach* appears in the 1959-60 and earlier editions.



TIDESURGE 1966, A. & J. Pavia

Oilers—continued

7 "Leaf" Group

APPLELEAF (ex-M.V. *George Lyras*) A 83

Displacement, tons	22 980 full load
Measurement, tons	16 850 deadweight; 11 588 gross; 6 559 net
Dimensions, feet	526 pp; 577.5 oa x 68 x 29.8 mean summer draught
Main Engines	Doxford 6-cyl diesel, 119 rpm, 6 800 bhp = 14 knots
Oil fuel (tons)	1 480
Complement	67

The M.V. *George Lyras*, built by Bartram & Co Ltd, and formerly owned by Marine Enterprises Ltd, was launched on 22 Apr 1955, completed in Sep 1955, and taken over by the Royal Navy on 17 Apr 1959 on a long term bareboat charter for service as a Royal Fleet Auxiliary and renamed *Appleleaf*.

A photograph of *Appleleaf* appears in the 1959-60 to 1965-66 editions.

BAYLEAF (ex-*London Integrity*) A 79 BRAMBLELEAF (ex-*London Loyalty*) A 81

Measurement, tons	17 960 deadweight; 12 123 gross; 7 042 net
Dimensions, feet	526 pp; 556.7 oa x 71.3 x 30
Main Engines	Doxford 6-cyl. diesel; 6 800 bhp = 14.5 knots (<i>Bayleaf</i>); 14 knots (<i>Brambleleaf</i>)
Oil fuel (tons)	1 470

Both built by Furness S.B. Co Ltd. *Bayleaf* was launched on 28 Oct 1954 and completed in Apr 1955. *Brambleleaf* was completed in Jan 1954. Both from London & Overseas Freighters Ltd, 22 May 1959. Photograph of *Bayleaf* in the 1959-60 edition (Addenda); and of *Brambleleaf* in the 1963-64 to 1966-67 editions.

CHERRYLEAF (ex-M.V. *Laurelwood*) A 82

Measurement, tons	18 560 deadweight; 12 402 gross; 7 338 net
Dimensions, feet	512 pp; 544 oa x 72.8 x 30.7 mean summer draught
Main Engines	Doxford 6-cyl. diesel; 6 800 bhp = 13.2 knots
Oil fuel (tons)	1 540

Built by Sir James Laing & Sons Ltd, Sunderland. Launched on 28 May 1953. Completed in Dec 1953. From Molasses & General Transport Co Ltd, 15 May 1959.

ORANGELEAF (ex-M.V. *Southern Satellite*) A 80

Measurement, tons	17 475 deadweight; 12 481 gross; 6 949 net
Dimensions, feet	525 pp; 556.5 oa x 71.7 x 30.5 mean
Main Engines	Doxford 6-cyl. diesel; 6 800 bhp = 15 knots
Oil fuel (tons)	1 610

Built by Furness Shipbuilding Co Ltd, Haverton Hill on Tees. Launched on 8 Feb 1955. Completed June 1955. From South Georgia Co Ltd, 25 May 1959.

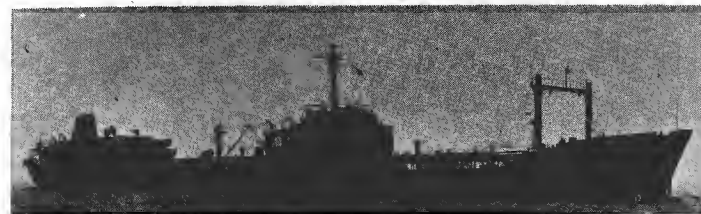


ORANGELEAF 1967, Skyfotos

PEARLEAF A 77

Displacement, tons	24 900 full load
Measurement, tons	18 045 deadweight; 12 139 gross; 7 216 net
Dimensions, feet	535 pp; 568 oa x 71.7 x 30
Main Engines	Rowan Doxford 6-cyl. diesels; 8 800 bhp = 15.8 knots

Built by Scotstoun Yard of Blythwood Shipbuilding Co Ltd, for Jacobs and Partners Ltd, London. Launched on 15 Oct 1959 and completed in Jan 1960. Chartered by the Royal Navy on completion. Can carry three different grades of cargo.



PEARLEAF 1966, Wright & Logan

PLUMLEAF A 78

Displacement, tons	24 920 full load
Measurement, tons	18 562 deadweight; 12 692 gross
Dimensions, feet	534 pp; 560 oa x 72 x 30
Main Engines	N.E. Doxford 6-cyl diesels; 9 350 bhp = 15.5 knots

Built by Blyth D.D. & Eng Co Ltd. Launched 29 Mar 1960. Completed July 1960.



PLUMLEAF 1965, Wright & Logan

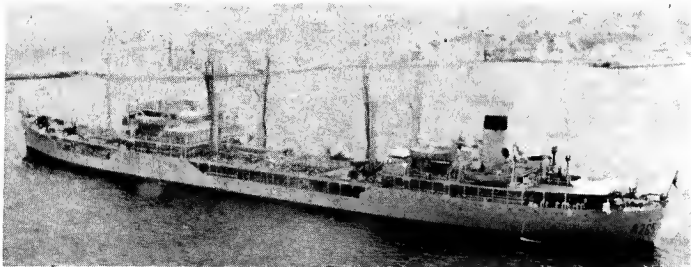
Oilers—continued

7 "Wave" Class

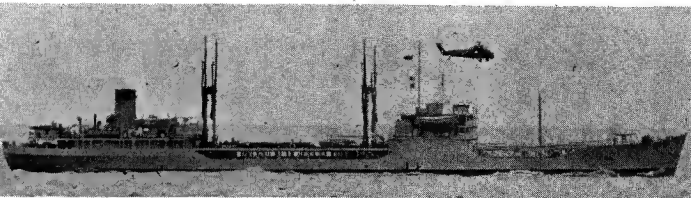
Name	No	Builders	Launched
WAVE BARON (ex-Empire Flodden)	A 242	Furness S.B. Co	19 Feb 1946
WAVE RULER (ex-Empire Evesham)	A 212	Ltd, Haverton	17 Jan 1946
WAVE SOVEREIGN	A 211	Hill-on-Tees	20 Nov 1945
WAVE CHIEF (ex-Empire Edgehill)	A 265	Harland & Wolff, Ltd (Govan), Glasgow	4 Apr 1946
WAVE DUKE (ex-Empire Mars)	A 246	Sir James Laing	16 Nov 1944
WAVE LAIRD (ex-Empire Dunbar)	A 119	& Sons Ltd,	3 Apr 1946
WAVE PRINCE (ex-Empire Herald)	A 207	Sunderland	27 July 1945

Displacement, tons 4 550 to 4 750 light; 8 200 standard; 16 476 to 16 485 full load
Measurement, tons 11 900 deadweight; 8 187 to 8 447 gross
Dimensions, feet 465.2 pp; 492.5 oa x 64.5 x 28.5
Main Engines Double reduction geared turbines, 6 800 shp = 15 knots
Boilers 3-drum type

Classed as Royal Fleet Auxiliaries. Launch dates above. Wave Baron, Wave Chief, Wave Prince and Wave Ruler are fleet replenishment ships, the other three being freighters. The turbines are of Metrovick type in Wave Baron, Wave Chief, Wave Duke and Wave Laird and Parsons type in the others. Wave Baron and Wave Prince were refitted and modernised in 1961-62. Wave Victor is on loan to the Air Ministry as a hulk at Gan Island. Wave Duke and Wave Laird are in reserve and may be hulked.



WAVE CHIEF 1966, A. & J. Pavia



WAVE RULER 1967, courtesy Dr. Aldo Fraccaroli

DISPOSALS. Wave Commander and Wave Liberator were scrapped in 1959. Wave Conqueror and Wave King were sold in 1960 when Wave Emperor, Wave Governor and Wave Premier were also stricken from the list. Wave Protector was hulked at Malta. Wave Regent was broken up and Wave Monarch was sold to foreign interests in 1961. Wave Knight and Wave Master were disposed of in 1963-64.

3 "Eddy" Class

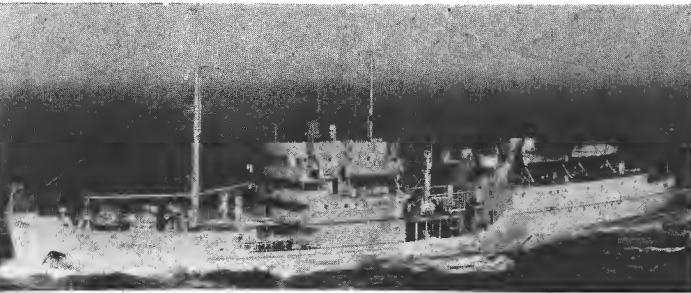
Name	No	Builders	Launched	Completed
EDDYFIRTH	A 261	Lobnitz & Co Ltd, Renfrew	10 Sep 53	10 Feb 54
EDDYNESS	A 295	Blyth Dry Docks & Shipbuilding Co	22 Oct 53	11 Oct 54
EDDYROCK	A 198	Blyth Dry Docks & Shipbuilding Co	16 Dec 52	7 June 53

Displacement, tons 1 960 light; 4 160 full load
Measurement, tons 2 157 to 2 300 gross; 2 095 to 2 200 deadweight
Dimensions, feet 270 pp; 286 oa x 44 x 17.2
Main Engines 1 set triple expansion; 1 shaft; 1 750 ihp = 12 knots
Boilers 2 oil burning cylindrical

Royal Fleet Auxiliaries. Launch dates above. Constructed on the combined transverse and longitudinal system of framing and classed 100 A1 at Lloyd's for the carriage of petroleum in bulk. Cargo capacity: 1 650 tons oil. Only Eddyfirth and Eddyrock appear in the 1967 Navy List. Eddyyness is in reserve (photograph in the 1963-64 to 1965-66 editions).

ENGINEERING. The main propelling machinery was built by Lobnitz & Co Ltd, Renfrew and boilers by Caledon Shipbuilding & Engineering Co Ltd, Dundee.

DISPOSALS. Eddybay, Eddybeach, Eddycliff, Eddycreek and Eddyreef were disposed of in 1963 and 1964.



EDDYFIRTH 1967, Skyfotos

Oilers—continued

DERWENTDALE (ex-M.V. Halcyon Breeze)
Measurement, tons 67 700 deadweight
Main Engines B. & W. diesels; 20 700 bhp

DEWDALE (ex-M.V. Edenfield)
Measurement, tons 60 600 deadweight
Main Engines B. & W. diesels; 17 000 bhp

ENNERDALE (ex-M.V. Naess Scotsman)
Measurement, tons 47 270 deadweight
Main Engines B. & W. diesels; 16 800 bhp

The Ministry of Defence (Navy) have completed negotiations (announced 13 July 1967) for the chartering of the above three large tankers for service East of Suez, and renamed them, re-introducing famous "Dale" class names. After limited modifications the ships are expected to operate in the Indian Ocean area. They will be manned by Royal Fleet Auxiliary personnel and will wear the Blue Ensign.

2 "Surf" Class

SURF PATROL (ex-Tatry) A 357 Displacement, tons 15 800
Measurement, tons 7 742 gross; 11 500 deadweight
Dimensions, feet 445 pp; 469.5 oa x 60.5 x 27.5 max
Main Engines Doxford 4-cyl diesels; 4 250 bhp = 13.75 knots

Taken over whilst under construction by Bartram's, Sunderland, for Poland, at the time of the Korean War. Launched on 7 Feb and 23 Apr 1951, respectively. Both in reserve. A photograph of Surf Patrol appears in the 1963-64 to 1965-66 editions.



SURF PIONEER Skyfotos

4 Later "Ol" Class

BIRCHOL (19 Feb 1946) A 127 ROWANOL (ex-Cedarol ex-Eborol 15 May 1946)
OAKOL (28 Aug 1946) A 300 TEAKOL (14 Nov 1946) A 167 A 284
Displacement, tons 2 670
Measurement, tons 1 638 deadweight; 1 440 gross
Dimensions, feet 218 pp; 232 oa x 39 x 15.8
Main Engines Triple expansion; 1 140 ihp = 11 knots
Complement 26

All built by Lobnitz & Co Ltd, Renfrew. Launch dates above. Classed as Royal Fleet Auxiliaries. A photograph of Oakol appears in the 1959-60 edition, and of Rowanol in the 1958-59 and earlier editions.



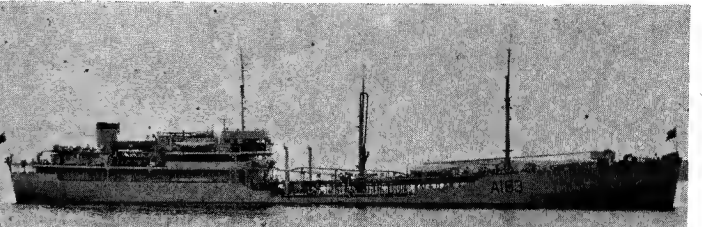
TEAKOL 1967, courtesy Godfrey H. Walker, Esq.

4 "Ranger" Class

BLACK RANGER (22 Aug 1940) A 163 BROWN RANGER (12 Dec 1940) A 169
BLUE RANGER (29 Jan 1941) A 157 GOLD RANGER (12 Mar 1941) A 130
Measurement, tons 3 313 to 3 417 gross. Gold Ranger 3 788 deadweight,
others 3 435 to 3 781 deadweight
Dimensions, feet Gold Ranger 339.5 pp; 355.2 oa x 47 x 20
Others 349.5 pp; 365.8 oa x 47 x 20
Main Engines Burmeister & Wain diesels; 2 750 bhp = 12 knots

Classed as Royal Fleet Auxiliaries. Built by Harland & Wolff Ltd, Govan, Glasgow, except Gold Ranger by Caledon S.B. & Eng Co Ltd, Dundee. Launch dates above. The funnel in these ships is on the port side. All are fitted with special derrick on the beam to facilitate fuelling at sea. Gray Ranger was lost during the Second World War. A photograph of Black Ranger appears in the 1960-61 and 1961-62 editions, and of Brown Ranger in the 1962-63 to 1966-67 editions.

DISPOSALS. Sister ship Green Ranger was officially deleted from the list in 1965. For disposals of older and other classes of oilers, including the old "Dale" class, see 1966-67 and earlier editions.



BLACK RANGER 1967, courtesy Godfrey H. Walker, Esq.

BOOM DEFENCE VESSELS

4 "Wild Duck" Class

GARGANEY P 194	GOLDENEYE P 195	MANDARIN P 192	PINTAIL P 193
Displacement, tons	950		
Dimensions, feet	150 pp; 168.2 excluding horns × 36.5 × 10.8		
Main Engines	Davey Paxman 16 cyl diesels; controllable pitch propeller		
Complement	24 (6 officers, 6 petty officers, 12 ratings)		

Mandarin was the first of a new class of marine service vessels. Launched on 17 Sep 1963 and handed over on 5 Mar 1964. *Pintail* was launched on 3 Dec 1963. Both built by Cammell Laird & Co Ltd, Birkenhead. Designed to be used for mooring, salvage and boom work. Previously these three tasks were separately undertaken by specialist vessels, but the new type is able to give all three services. Capable of laying out and servicing the heaviest moorings used by the Fleet and also maintaining booms for harbour defence. Heavy lifting equipment enables a wide range of salvage operations to be performed, especially in harbour clearance work. The special heavy winches have an ability for tidal lifts over the apron of 200 tons. *Garganey* and *Goldeneye* (port auxiliary service, civilian crew) were built in 1966-67 by Brooke Marine Ltd, Lowestoft. A photograph of *Mandarin* appears in the 1965-66 and 1966-67 editions.

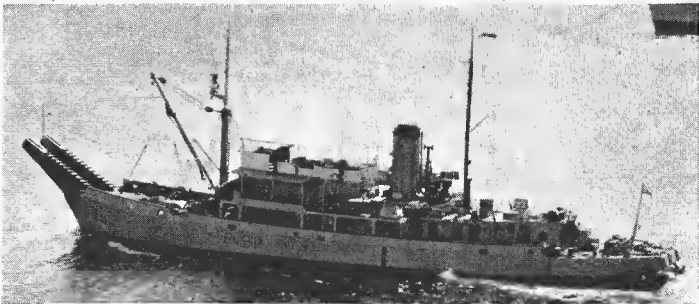


GOLDENEYE 1967, Wright & Logan

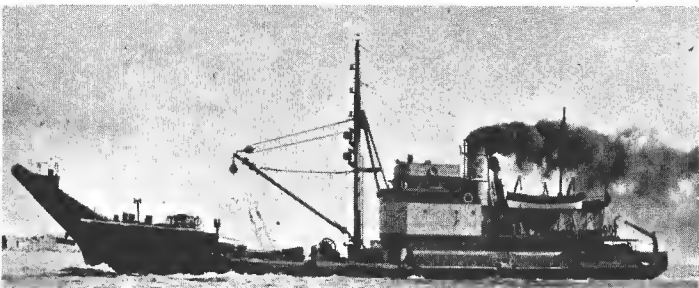
2 "Lay" Class

LAYBURN P 191	LAYMOOR P 190
Displacement, tons	800 standard; 1 050 full load
Dimensions, feet	160 pp; 192.7 oa × 34.5 × 11.5 feet
Main Engines	Triple expansion; 2 shafts; 1 300 ihp = 14 knots
Boilers	2 Foster Wheeler "D" type; 200 psi
Complement	2 officers; 29 to 34 ratings

Both built by Wm. Simons & Co Ltd (Simons-Lobnitz Ltd). The first boom defence vessels designed and built since the Second World War. *Laymoor* was the first and "name" ship of her class. *Layburn*, which cost £565,000 was launched on 14 Apr 1960 and completed on 7 July 1960. *Laymoor* which cost £562,000 was launched on 6 Aug 1959 and accepted on 9 Dec 1959. In addition to minor salvage work and towing net sections, can lay and maintain the latest types of underwater and surface boom defences, first class moorings and navigational buoys. Detailed specifications of the propulsion plant appear in the 1966-67 and earlier editions. Designed for naval or civilian manning. Lifting capacity is greater than that of predecessors, improvement in accommodation enables them to be operated in any climate. A photograph of *Laymoor* appears in the 1964-65 to 1966-67 editions.



LAYBURN 1967, A. & J. Pavia



MOORHEN 1967, Wright & Logan

18 "Bar" Class

Name	No	Launched	Name	No	Launched
2 Airdrosson Dockyard Co Ltd			4 John Lewis & Sons Ltd, Aberdeen		
BARBECUE	P 214	19 Dec 1944	BARFIELD	P 244	28 July 1938
BARCAROLE	P 287	14 Mar 1945	BARFOOT	P 202	25 Sep 1942
3 Blyth D.D. & S.B. Co			BARGLOW	P 216	9 Nov 1942
BARBAIN	P 201	8 Jan 1940	BARNARD	P 241	1 July 1942
BARBICAN	P 243	14 Mar 1938	2 Lobnitz & Co Ltd, Renfrew		
BARNSTONE	P 297	25 Nov 1939	BARCLIFF	P 207	10 May 1940
1 Ferguson Bros Ltd, Port Glasgow			BARNDALE	P 215	30 Nov 1939
BARHILL	P 204	26 Nov 1942	1 Philip & Son Ltd, Dartmouth		
1 Hall Russell & Co Ltd, Aberdeen			BARFOIL	P 294	18 July 1942
BARRAGE	P 254	2 Dec 1937	4 Wm Simons & Co Ltd, Renfrew		
Displacement, tons	750 standard; 919 to 1 000 full load		BARFOAM	P 282	8 Sep 1942
Dimensions, feet	150 pp; 173.8 oa; 182 horns × 32.2 × 11.5		BARFOSS	P 200	17 Feb 1942
Main Engines	Triple expansion; 850 ihp = 11 knots. Sea speed 9 knots		BARMOND	P 232	24 Dec 1942
Boilers	2 S.E. (200 lbs per sq in)		BARRINGTON	P 259	15 Nov 1940
Fuel, tons	214 coal (<i>Barfoam</i> and <i>Barmond</i> converted to oil in 1966)				
Radius, miles	3 000				
Complement	32				

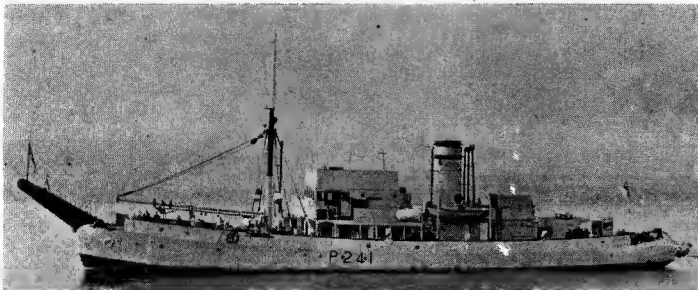
Built under the 1936, 1937, 1939 and Second World War Estimates. Bow lift of 27 to 70 tons. *Barcarole*, *Barcliff*, *Barhill* and *Barndale* are Port Auxiliary Service Craft. *Barbecue*, *Barfield*, *Barfoot*, *Barfoss* and *Barglow* are also civilian manned. *Barfoss* is a Degaussing Rangelaying vessel. Second World War losses: *Barflake*, *Barlight*. A photograph of *Barfoss* appears in the 1963-64 to 1966-67 editions.

TRANSFERS. *Barbrake* and *Barcross* were transferred to South Africa, *Barbarian*, *Barbette* (first of this name in the class, launched on 15 Dec 1937) and *Barfair* to Turkey, *Baron* to Ceylon in 1958 (purchased by the Colombo Port Commission).

DISPOSALS. *Barbour*, *Bardell* and *Barricade* were discarded. *Barberry*, *Barbrook*, *Barcombe*, *Barford*, *Baritone*, *Barlane*, *Barlow*, *Barmill*, *Barneath* and *Barnwell* were for disposal in 1958, *Barilla* and *Baronia* in 1959, *Barholm* and *Barstoke* in 1960, *Barbette* (second of this name in the class, accepted into service on 12 July 1943), *Barbridge*, *Barcastle*, *Barcock*, *Barcote*, *Barcroft*, *Bardolf*, *Barlake*, *Barsing*, *Barsound*, *Barthorpe* and *Barrier* in 1962, *Barbourne*, *Barclose*, *Barking*, *Barspear* and *Barwind* in 1963, *Barbastel*, *Barfount*, *Barkis*, *Barleycorn*, *Barmouth*, *Barnaby*, *Barnehurst*, *Barova*, *Barranca* and *Barrhead* in 1964, *Bartisan* in 1966.



BARNDALE 1965, Dr. Giorgio Arra



BARNARD 1967, courtesy Dr. Giorgio Arra

4 "Moor" Class

MOORHEN A 489	MOORLAND A 491	MOORPOUT P 223	MOORSMAN P 284
Displacement, tons	Moorhen, Moorput: 650 standard; 900 full load; Moorland, 600 standard; 800 full load		
Dimensions, feet	Moorhen, Moorput: 149 pp; 159 oa hull × 30 × 12 (196 oa horns;) Moorland: 135 pp; 145 oa hull × 30 × 12		
Main Engines	500 ihp = 9 knots		

Built in 1938-46. Displacement and dimensions vary. Employed as Boom Defence Vessels, Boom Working Vessels, Mooring Vessels and Salvage Vessels. Fitted with salvage pumps, air compressors and diving equipment. *Moorsman* and *Moorput* are of the larger type built by H.M. Dockyard, Chatham. *Moorland* was built by Goole Shipbuilding & Repair Co Ltd. *Moorhen*, *Moorland* and *Moorput* are Port Auxiliary Service Craft at Malta, Gibraltar and Devonport, respectively. *Moorsman*, in the Clyde, is also civilian manned. A photograph of *Moorput* appears in the 1963-64 to 1966-67 editions.

DISPOSALS. *Moordale* was sold in 1961. *Moorburn*, *Moorcock*, *Moorfield*, *Moorfire*, *Moorgrass*, *Moorhill*, *Moormyrtle* and *Moorside* were for disposal in 1962, *Mooreess* and *Moorfowl* in 1963. *Moorfly* and *Moorgrieve* were also sold.

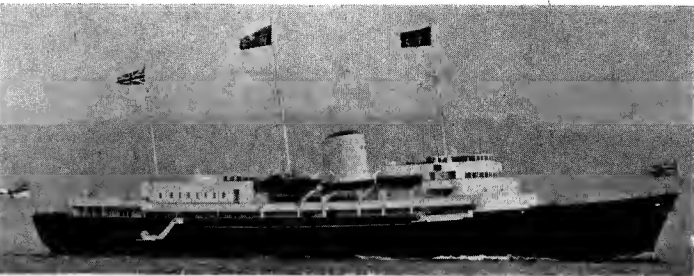
ROYAL YACHT

BRITANNIA A 00

Displacement, tons	3 990 light; 4 961 full load
Measurement, tons	5 769 gross
Dimensions, feet	Length: 360 pp; 380 wl; 412.2 oa; Beam: 55. Draught: 15.6 (mean at load), 17 max.
Main Engines	Single reduction geared steam turbines; 2 shafts; 12 000 shp = 21 knots approx continuous cruising speed; 22.75 knots max (trials)
Boilers	2
Radius, miles	2 100 at 20 knots; 2 400 at the economical speed of 18 knots; 3 000 miles at 15 knots
Oil fuel (tons)	330 (can be increased to 490 with auxiliary fuel tanks)
Complement	271

This vessel was designed as a medium sized naval hospital ship to be used by Her Majesty The Queen in time of peace as a Royal Yacht. Built by John Brown & Co Ltd, Clydebank. Ordered in Feb 1952. Laid down on 16 June 1952. Launched on 16 Apr 1953. Completed on 14 Jan 1954. She has endurance sufficient to enable her to undertake long ocean voyages, modified cruiser stern, and raked bow. Her construction conforms to mercantile practice. The complete bridge structure, and the funnel, are constructed of aluminium. The ship is fitted with Denny-Brown single fin stabilisers to reduce roll in bad weather from 20 deg to 6 deg. Cost £2,098,000. To enable her to pass under the bridges of the St. Lawrence Seaway when she visited Canada, the top 20 feet of her mainmast and the wireless aerial on her foremast were hinged in Nov 1958 so that they can be lowered as required.

PHOTOGRAPHS. Larger aerial photographs appear in the Addenda of the 1958-59 edition and in the 1959-60 edition, a starboard view in the 1960-61 to 1962-63 editions and a port broadside surface view in the 1963-64 to 1966-67 editions.



BRITANNIA 1967, courtesy Dr. Giorgio Arra

TRAWLERS

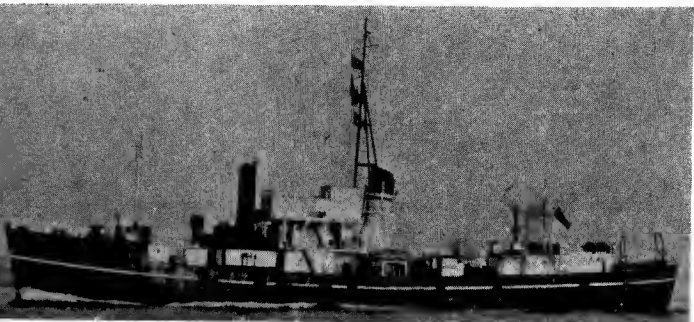
8 "Isles" Class (Tank Cleaning Vessels)

2 Ardrossan Dockyard Co Ltd, Ardrossan	1 A. & J. Inglis Ltd, Glasgow
COLL 7 Apr 1942	SWITHA 3 Apr 1942
GRAEMSAY 3 Aug 1942	3 John Lewis & Sons Ltd., Aberdeen
2 Cook, Welton & Gemmell Ltd, Beverley	CALDY 31 Aug 1943
BERN 2 May 1942	FOULNESS 23 Mar 1943
LUNDY 29 Aug 1942	SKOMER 17 June 1943

Displacement, tons	560 standard; 770 full load
Dimensions, feet	150 pp; 164 oa x 27.5 x 14
Main Engines	Triple expansion; 1 shaft; 850 ihp = 12 knots
Boilers	1 cylindrical
Coal, tons	183
Radius, miles	4 200 at 8 knots

Launch dates above. Former minesweeping trawlers converted to tank cleaning vessels. Classed as port auxiliary service craft and have "A" pennant numbers. Sister ship *Bardsey*, also converted, was taken over by Malta Dockyard. For transfers, disposals and other particulars of "Isles" class trawlers see 1961-62 edition.

PHOTOGRAPHS. A large photograph of *Graemsay* appears in the 1959-60 to 1961-62 editions and a port broadside view of *Skomer* in the 1962-63 to 1966-67 editions.



SWITHA 1967, J. W. Kennedy

OCEAN SALVAGE VESSELS

SALVEDA

Displacement, tons	1 250 standard; 1 360 full load
Dimensions, feet	184 pp; 194 oa x 34.5 x 11.2 mean
Main Engines	1 200 hp = 12 knots
Oil fuel, tons	150
Complement	62

Built by Cammell Laird & Co Ltd, Birkenhead, and launched on 9 Feb 1943. Formerly a Royal Fleet Auxiliary ocean salvage vessel on charter to Metal Industries Ltd. In the Spring 1967 Navy List, in reserve.

Ocean Salvage Vessels—continued

6 "Salv" Class

PRINCE SALVOR SALVALOUR	SALVESTOR SALVICTOR	SALVIGIL SEA SALVOR
Displacement, tons	1 440 standard; 1 700 full load	
Measurement, tons	1 114 to 1 122 gross	
Dimensions, feet	200.2 pp; 216 oa x 37.8 x 13 max	
Main Engines	Triple expansion; 2 shafts; 1 500 ihp = 12 knots	
Oil fuel, tons	310	
Complement	52 to 72	

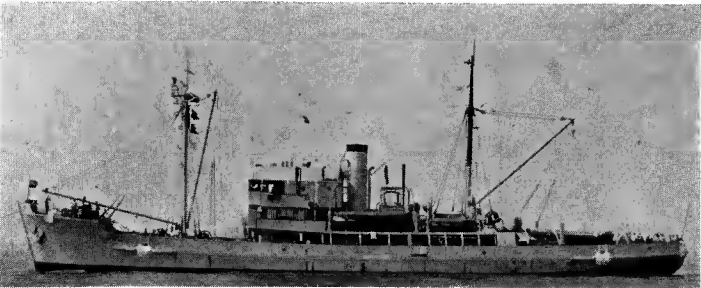
Ocean salvage vessels. All launched in 1942-45. *Prince Salvor*, *Salvalour* and *Sea Salvor* were built by Goole Shipbuilding & Repair Co Ltd, and launched on 8 Mar 1943, 2 Nov 1944 and 22 Apr 1943, respectively. *Salvestor*, *Salvictor* and *Salvigil* were built by Wm. Simons & Co Ltd, Renfrew, and launched on 28 Aug 1942, 11 Mar 1944 and 30 Apr 1945, respectively. *Sea Salvor* is a Royal Fleet Auxiliary. *Prince Salvor* and *Salvigil*, formerly on charter to commercial firms, and *Salvalour*, *Salvestor* and *Salvictor* are in the Navy List, in reserve.

TRANSFERS. *Salventure* is on loan to the Royal Hellenic Navy and is temporarily re-named *Sotir*.

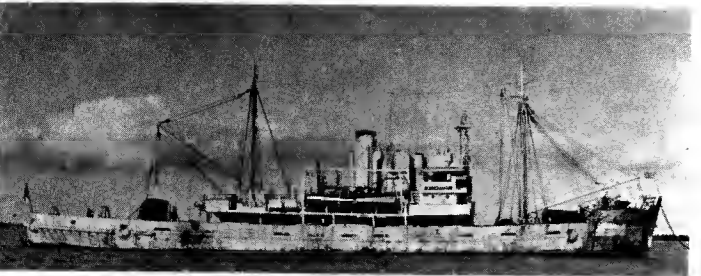
CLASS

King Salvor was converted to a submarine rescue bell ship in 1953-54 and renamed *Kingfisher* and was sold to Argentina in Dec 1960, sailing to Argentina in Apr 1961 under the new name *Tehuelche* (again renamed *Guardiamarina Zicari* in 1963). *Salvage Duke*, formerly on charter to Turkish Salvage Administration (renamed *Imroz*), was gutted by fire in 1959.

DISPOSALS. *Ocean Salvor* and *Salviola* were disposed of in 1960, and others will be.



SEA SALVOR 1967, courtesy Dr. Giorgio Arra



SALVICTOR Added 1966. Official

COASTAL SALVAGE VESSELS

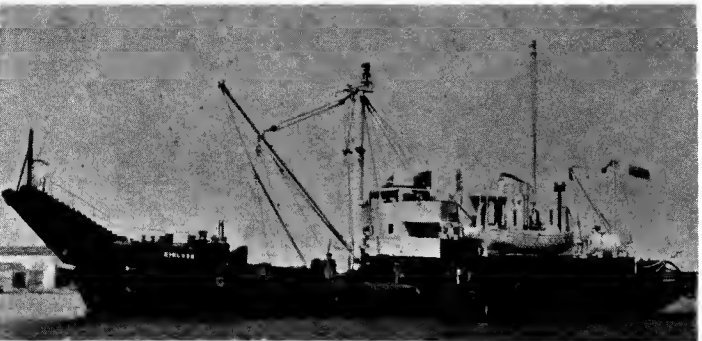
6 "Kin" Class

KINBRACE 17 Jan 45	KINLOSS 14 Apr 45	SWIN 25 Mar 44
KINGARTH 22 May 44	SUCCOUR 18 Aug 43	UPLIFTER 29 Nov 43
Displacement, tons	950 standard; 1 050 full load	
Measurement, tons	775 gross, 261.6 register	
Dimensions, feet	150 pp; 179.2 oa x 35.2 x 9.5 mean; 12 max	
Main Engines	Triple expansion; 1 shaft; 600 ihp = 9 knots	
Boilers	1 return tube cylindrical (30 ton)	
Complement	34	

Coastal salvage vessels. Launch dates above. Equipped with horns and heavy rollers. Can lift 200 tons dead weight over the bow. *Kinbrace*, *Kingarth*, *Kinloss* and *Swin* were built by A. Hall, Aberdeen, *Succour* by Smith's Dock. *Uplifter*, built by Smith's Dock Co Ltd, was the only salvage vessel wearing the White Ensign. She was laid down on 13 Feb 1943, and completed on 6 Apr 1944. (*Kingarth* wore the White Ensign in 1957). *Dispenser* is on charter to Liverpool & Glasgow Salvage Association. *Succour* and *Swin* are Royal Fleet Auxiliaries wearing the Blue Ensign. *Kinbrace*, *Kingarth* and *Uplifter* are in the Navy List, in reserve. *Kinloss* is in the Port Auxiliary Service as a mooring vessel.

PHOTOGRAPHS. A photograph of *Kingarth* appears in the 1959-60 and earlier editions, of *Swin* in the 1956-57 and earlier editions, and of *Uplifter* in the 1960-61 to 1962-63 editions.

DISPOSALS. Sister *Help* was disposed of. *Lifeline* was on the disposal list in 1960.

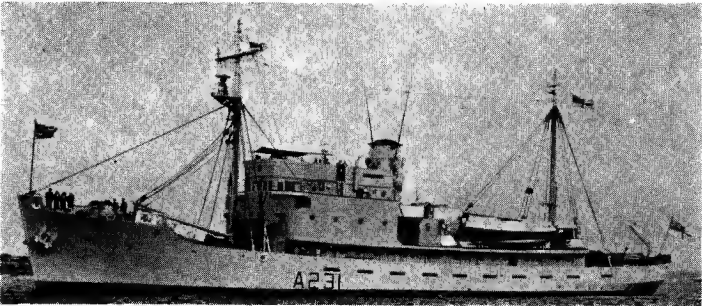


KINLOSS 1966, Wright & Logan

MINE COUNTERMEASURE SUPPORT
AND DIVING TRIALS SHIP
Modified Ocean Salvage Vessel

RECLAIM (ex-Salverdant) A 231
Displacement, tons 1 200 standard; 1 800 full load
Dimensions, feet 200 pp; 217.8 oa x 38 x 15.5
Main Engines Triple expansion; 2 shafts; 1 500 ihp = 12 knots
Oil fuel, tons 310
Radius, miles 3 000
Complement 84

CONSTRUCTION. Built by Wm. Simons & Co Ltd, Renfrew. Engineered by Aitchison Blair Ltd. Laid down on 9 Apr 1946. Launched on 12 Mar 1948. Completed in Oct 1948. Her construction was based on the design of a "King Salvor" class naval ocean salvage vessel. She was the first deep diving and submarine rescue vessel built as such for the Royal Navy. She is fitted with sonar, radar, echo-sounding apparatus for detection of sunken wrecks, and equipped for submarine rescue work.
RECLASSIFICATION. Formerly a tender to H.M.S. *Vernon* shore establishment at Portsmouth for deep diving experiments, and subsequently a deep diving vessel in the Portsmouth Squadron. Reclassified as a Mine Countermeasure Support and Diving Trials Ship in 1960, and attached to H.M.S. *Lochinvar*, the minesweeping base at Port Edgar. Carried out deep experiments in the Canary Islands in Jan to Mar 1961.

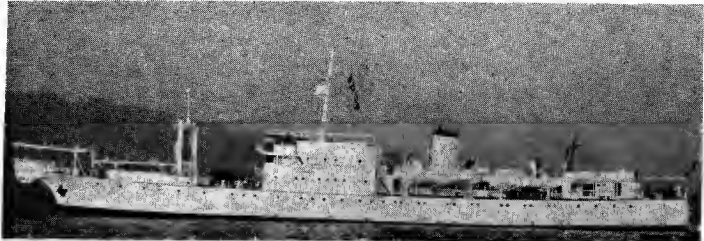


RECLAIM 1967, Wright & Logan

CABLE SHIPS
2 "Bull" Class

BULLFINCH (19 Aug 1940) **ST. MARGARETS** (13 Oct 1943)
Displacement, tons 1 300 light; 2 500 full load
Measurement, tons 1 524 gross; 1 200 deadweight
Dimensions, feet 228.8 pp; 252 oa x 36.5 x 16.3 mean
Main Engines Triple expansion; 2 shafts; 1 250 ihp = 12 knots

Royal Fleet Auxiliaries. Both built by Swan, Hunter & Wigham Richardson Ltd. Launch dates above. *Bullfrog* and *Bullhead* of this type were transferred to Cable and Wireless service in 1947. Provision was made for mounting one 4 inch gun and four 20 mm AA guns but no armament is fitted.



BULLFINCH 1966, Official



ST. MARGARETS 1967, A. & J. Pavia

HOVERCRAFT
1 SRN 6 Civil Type

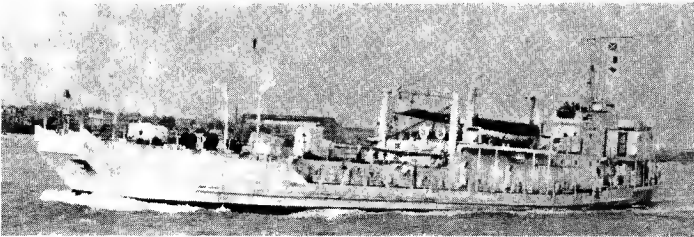
Dimensions, feet 48 length x 23 beam
Main Engines Rolls Royce Marine Gnome, 900 hp = 50 knots
Range, miles 200

It was officially announced on 16 June 1967 that:—"A civilian type SRN 6 Hovercraft has been ordered by the Ministry of Defence and will be delivered by the British Hovercraft Corporation within the next few weeks, when the Royal Navy's first operational Hovercraft Unit will be formed. It will be taken in hand for modification for Service use at the Royal Naval Aircraft Yard, Fleetlands, Gosport, including the installation of radar and military communications equipment for its primary role of a fast amphibious communication craft to support Royal Marine units. It will not be armed as its role will not involve belligerent use."

EXPERIMENTAL TRIALS VESSELS

WHIMBREL (ex-NSC (E) 1012)
Displacement, tons 300 (official figure)
Dimensions, feet 190 x 30 x 4.5

Experimental Trials Vessel. Basically of the tank landing craft LCT(3) Type



WHIMBREL 1965, J. W. Kennedy

ICEWHALE
Displacement, tons 289 standard; 350 full load
Dimensions, feet 120 x 24 x 9
Main Engines Speed = 9 knots
Complement 12 (Master, Mate and 10 ratings)

Experimental Trials Vessel for the Underwater Weapons Establishment, Portland.

SAREPTA (ex-Frieda Peters)
Displacement, tons 465 standard
Dimensions, feet 150 pp; 157 oa x 27.5 x 12
Tubes 4—21 inch

Ex-German vessel. Launched in 1920. Multi-purpose torpedo experimental, torpedo-firing, and torpedo recovery vessel. Reclassified as TRV in 1956, but not numbered. A photograph of *Sarepta* appears in the 1951-52 to 1957-59 editions. *TRV 1*, *TRV 3*, *TRV 4*, *Choctaw* (TRC 4817) and *Mortar* are also employed as recovery vessels. *TRV 6* is an experimental trials vessel, and *NSB 351*, *NSB 358* and *NSB 359* (ex-LCM (7)s 7037, 7104 and 7110, respectively) are trials vessels.

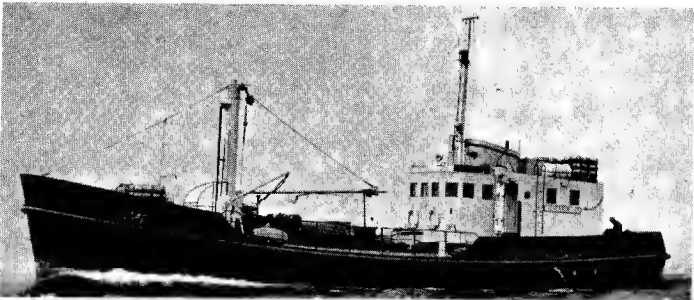


ICEWHALE 1963, courtesy Godfrey H. Walker, Esq.

FLEET TENDERS
12 "Aberdovey" Class

ABERDOVEY **ALNMOUTH** **BEAULIEU** **BIBURY**
ABINGER **APPLEBY** **BEDGELERT** **BLAKENY**
ALNESS **ASHCOTT** **BEMBRIDGE** **BRODICK**
Measurement, tons 70 gross register
Dimensions, feet 75 pp; 79.2 oa x 18 x 5.5
Main Engines 1 Lister Blackstone 4-cyl diesel; 210 bhp = 10.5 knots

Built in 1963-65 by Isaac Pimlott & Sons, Northwich, and J. S. Doig Ltd, Grimsby, six by each yard. Built to the requirements of Lloyd's Register. Designed to carry 25 tons deadweight (or up to 3 000 cu ft) of stores or 200 standing passengers in addition to two 21 inch torpedoes each weighing 1.8 tons. The Royal Navy intends to build 60 new fleet tenders over a period of ten years to replace the old MFVs.



BEAULIEU 1965, Wright & Logan

MFV Types

Employed for subsidiary duties serving warships and in the dockyards, of four types:—

MFV 2 to 436 Length: 61.5 feet 53 in port auxiliary service
MFV 609 to 944 Length: 45 feet 24 in port auxiliary service
MFV 1004 to 1257 Length: 75 feet 36 in port auxiliary service
MFV 1526 to 1574 Length: 90 feet 5 in port auxiliary service

MFV 1044 was armed with 1—40 mm forward (in place of mast) and 1—20 mm on the after superstructure, *MFV 1151*, *Squirrel* and *MFV 1080*, *Watchful*, were employed as Fishery Protection Gunboats until replaced. *MFV 72*, *197*, *255* and *658* were latterly in the Navy List. *MFV 1060* is at Portsmouth.
MFV 270, *2041* and *1564* were discarded in 1957, *MFV 1161* in 1959, 56 others in 1960, *MFV 32* and *1189* in 1961, ten in 1962 including *MFV 36*, *174* and *637*, and 17 in 1963. *MFV 1036* was wrecked in Apr 1963 and sold. *MFV 76*, *77*, *101*, *133*, *301* and *867* were for disposal in 1964, and *671*, *1023* and *1207* sold in 1966.

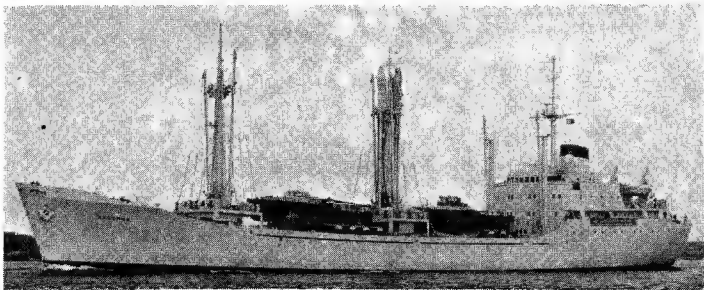
STORE CARRIERS

2 "Bacchus" Class

BACCHUS A 404

Displacement, tons	2 740 light; 7 958 full load
Measurement, tons	4 823 gross; 2 441 net; 5 218 deadweight
Dimensions, feet	350 pp; 379 oa x 55 x 22 max
Main Engines	Swan Hunter Sulzer diesel; 1 shaft; 5 500 bhp = 15 knots
Oil fuel, tons	720
Complement	57

Built by Henry Robb Ltd, Leith, for the British India Steam Navigation Co. Taken over by the Royal Navy on completion on long term bare boat charter and operated as Royal Fleet Auxiliaries. Rated as dry cargo ships. *Bacchus* was completed in Sep 1962, *Hebe* in May 1962. Crew accommodation and engines aft as in tankers.



BACCHUS 1967, Wright & Logan

THOMAS GRANT

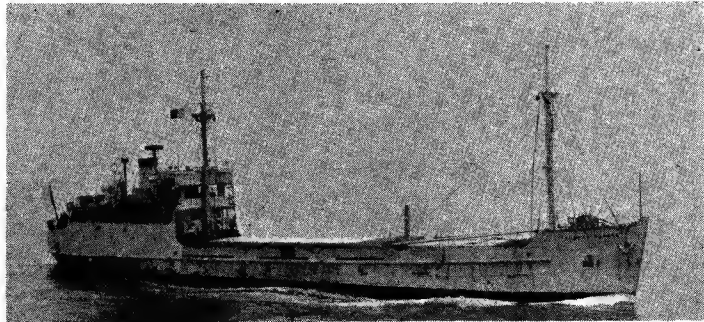
Displacement, tons	209 light; 461 full load
Measurement, tons	252 deadweight; 218 gross
Dimensions, feet	113.5 x 25.5 x 8.8
Main Engines	2 diesels; Speed = 9 knots

Local store carrier. Completed in 1953. Built by Charles Hill & Sons Ltd, Bristol. A photograph appears in the 1957-58 and earlier editions. Turned over to the Port Auxiliary Service in 1959 under Dockyard administration at Portsmouth.

ROBERT DUNDAS A 204

Displacement, tons	900 light; 1 900 full load
Measurement, tons	1 000 deadweight; 1 125 gross
Dimensions, feet	210 pp; 222.5 oa x 35 x 13.5 mean
Main Engines	Atlas Polar Diesel; 1 shaft; 960 bhp = 10.5 knots
Oil fuel, tons	60
Complement	17

Coastal store carriers. Both built by Grangemouth Dockyard Co Ltd. Machinery by British Auxiliaries Ltd, Govan. Launched on 28 July and 29 June 1938, respectively. *Robert Middleton* 220 ft oa. Royal Fleet Auxiliaries.



ROBERT DUNDAS 1966, courtesy Dr. Giorgio Arra

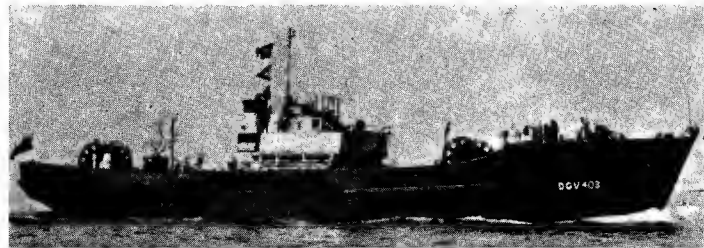
DEGAUSSING VESSELS

3 Ex-Motor Minesweepers

DGV 400 (ex-MMS 1002) DGV 401 (ex-MMS 1003) DGV 403 (ex-MMS 1011)

Displacement, tons	254 standard; 360 full load
Dimensions, feet	126 pp; 140 oa x 26 x 12.5 max
Main Engines	Gardner diesel; 500 bhp = 10 knots
Oil fuel, tons	55
Complement	21

Converted motor minesweepers of the "126-ft." Type, 1001 series, of wooden construction. Being replaced by converted inshore minesweepers. Sister ship DGV 402 (ex-MMS 1004) was officially stricken from the list in 1963.



DGV 403 1963, J. W. Kennedy

ARMAMENT CARRIERS

THROSK

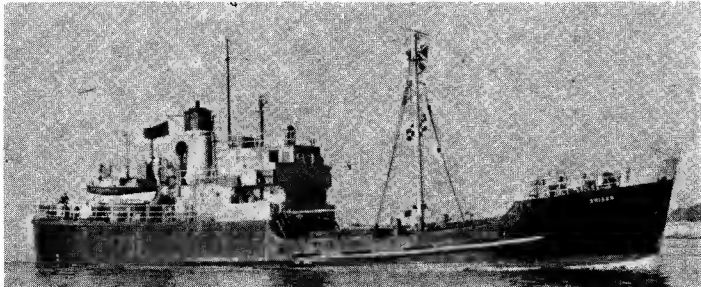
KINTERBURY A 378	1 490 standard; 1,770 full load
Displacement, tons	600 deadweight
Measurement, tons	185 pp; 199.8 x 34.3 x 13
Dimensions, feet	Triple expansion; 1 shaft; 900 ihp = 11 knots
Main Engines	154
Coal, tons	

Launched in 1943 and 1944, respectively. Both built by Philip & Son Ltd. Rated as naval armament carriers. Converted in 1959 with hold stowage and a derrick for handling guided missiles for attending and servicing the guided weapons trials ship *Girdle Ness*. A photograph of *Throsk* appears in the 1957-58 and earlier editions, and of *Kinterbury* in the 1963-64 to 1966-67 editions.

ENFIELD A 395	MAXIM A 377	SNIDER A 375
GATLING A 376	NORDENFELT A 135	

Displacement, tons	604 to 663
Measurement, tons	340 deadweight
Dimensions, feet	131.5 to 144.5 x 25 x 8
Main Engines	Reciprocating; 500 ihp = 9 knots
Complement	13

All built by Lobnitz & Co Ltd, Renfrew, and rated as naval armament carriers. *Chattenden* was reduced to reserve in 1961 and used as a dumb derrick lighter.



SNIDER 1967, J. W. Kennedy

BALLISTA	BOWSTRING	FLINTLOCK	OBUS
BLOW PIPE	CATAPULT	MATCHLOCK	SPEAR

Of various displacements and other particulars. In the Port Auxiliary Service.

WATER CARRIERS

4 "Water" Class

WATERFALL	WATERSHED	WATERSIDE	WATERSPOUT
Measurement, tons	300 gross		
Main Engines	Diesels; speed = 11 knots		

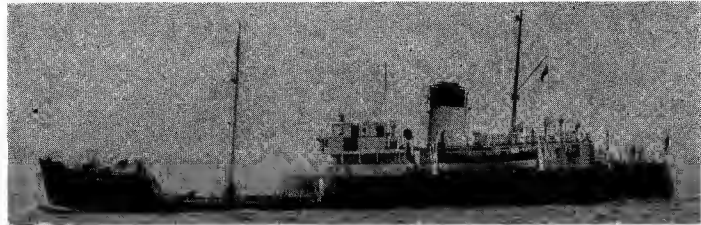
Built in 1966 by Drypool Engineering & Drydock Co, Hull.

5 "Spa" Class

2 Charles Hill & Sons Ltd, Bristol	3 Philip & Son Ltd, Dartmouth
SPALAKE (10 Aug 46) A 260	SPA (11 Oct 41) A 192
SPAPOOL (28 Feb 46) A 222	SPABROOK (24 Aug 44) A 224
	SPABURN (5 Jan 46) A 257

Displacement, tons	1 219 full load
Measurement, tons	630 deadweight; 672 to 719 gross
Dimensions, feet	160 pp; 172 oa x 30 x 12
Main Engines	Triple expansion; 675 ihp = 9 knots
Coal, tons	90

Spabeck, high test peroxide carrier for the experimental submarine *Explorer*, was disposed of in May 1966. A photograph of *Spa* appears in the 1963-64 to 1966-67 editions.



SPALAKE 1967, courtesy Dr. Giorgio Arra

12 "Fresh" Class

FRESHBURN	FRESHLAKE	FRESHPOOL	FRESHTARN
FRESHENER	FRESHMERE	FRESHSPRAY	FRESHWATER
FRESHFORD	FRESHPOND	FRESHSPRING	FRESHWELL

Displacement, tons	594
Dimensions, feet	126.2 x 25.5 x 10.8 max
Main Engines	Triple expansion; 450 ihp = 9 knots

Freshener, *Freshspray*, *Freshspring* and *Freshwater* were converted from coal to oil fuel, in 1961. A photograph of *Freshpond* appears in the 1951-52 to 1953-54 editions and of *Freshlake* in the 1963-64 to 1965-66 editions. *Freshbrook* and *Freshnet* were stricken in 1963.



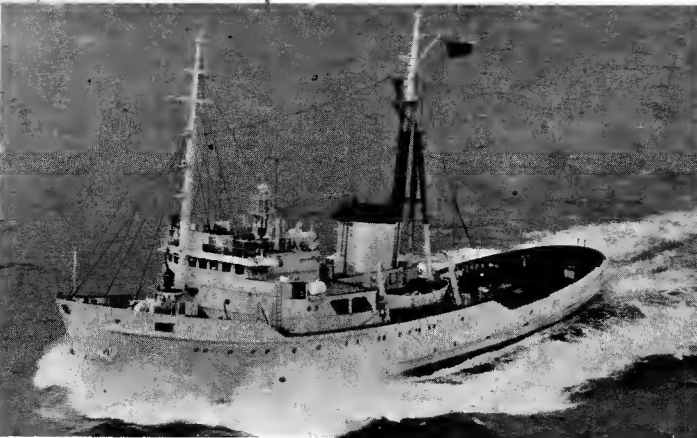
FRESHPOOL 1966, courtesy Dr. Giorgio Arra

TUGS

TYPHOON A 95

Displacement, tons 800 standard; 1 380 full load
Dimensions, feet 200 oa; 181 pp x 40 x 13
Main Engines 2 12-cyl turbocharged vee type diesels; 1 shaft;
2 750 bhp = over 16 knots

Royal Fleet Auxiliary. Built by Henry Robb & Co Ltd, Leith. Launched on 14 Oct 1958. Completed in 1960. Diesels manufactured by Vickers-Armstrongs Ltd, Barrow-in-Furness. The machinery arrangement of two diesels geared to a single shaft was an innovation for naval ocean tugs. Controllable pitch propeller, 150 rpm. Fitted for fire fighting, salvage and ocean rescue, with a heavy mainmast and derrick attached. Bollard pull 32 tons.



TYPHOON 1966, Skyfotos

2 "Con" Class

CONFIANCE (15 Nov 1955) A 289 **CONFIDENT** (17 Jan 1956) A 290
Displacement, tons 760 loaded
Dimensions, feet 140 pp; 154.8 oa x 35 x 11
Main Engines 4 Paxman diesels; 2 shafts; 1 600 bhp = 13 knots
Complement 29 plus 13 salvage party

Built by A. & J. Inglis Ltd, Glasgow. Launch dates above. *Confiance* was completed on 27 Mar 1956. Fitted with 2 50 m diam Stone Kamewa controllable pitch propellers.

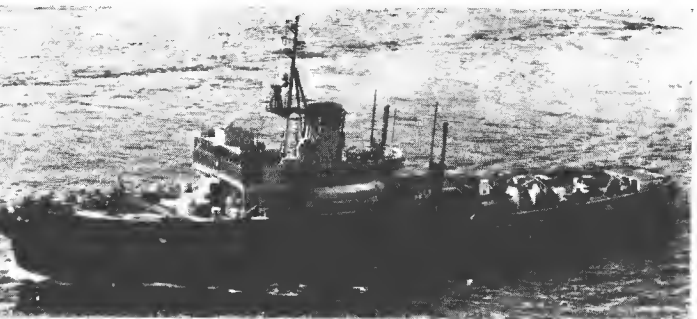


CONFIANCE 1967, Wright & Logan

3 "Samson" Class

SAMSON (14 May 1953) A 390 **SEA GIANT** (2 June 1954) A 288
SUPERMAN (23 Nov 1953)
Displacement, tons 1 200 full load
Measurement, tons 850 gross
Dimensions, feet 165 pp; 180 oa x 37 x 14
Main Engines Triple expansion; 2 shafts; 3 000 ihp = 15 knots

All built and engined by Alexander Hall & Co Ltd, Aberdeen. Launch dates above. A photograph of *Samson* appears in the 1957-58 and earlier editions.



SEA GIANT 1963, A. & J. Pavia

2 "Envoy" Class

ENCORE (Dec 1944) A 379 **ENVOY** (Feb 1944) A 165
Displacement, tons 868 standard; 1 332 full load
Measurement, tons 762 gross
Dimensions, feet 160 pp; 174.5 oa x 34.5 x 15.7 max
Main Engines Triple expansion; 1 700 ihp = 12 knots
Boilers 2 cylindrical
Oil fuel, tons 398
Complement 33

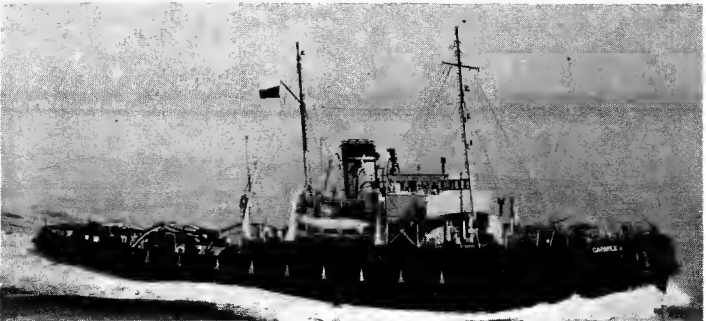
All built by Cochrane & Sons Ltd, Selby. Launch dates above. In wartime these ships carried 1—3 inch AA gun, 2—20 mm AA guns, and 2 MG. *Enticer* was lost on 21 Dec 1946. *Enforcer* and *Enigma* were stricken from the list in 1963.

Tugs—continued

4 "Nimble" Class

CAPABLE (22 Nov 1945) A 508 **EXPERT** (1944) A 172
CAREFUL (23 Oct 1945) A 293 **NIMBLE** (4 Dec 1941) A 223
Displacement, tons 890 standard; 1 190 full load
Dimensions, feet 165 pp 175 oa x 35.8 x 13.8
Main Engines Triple expansion; 2 shafts; 3 500 ihp = 16 knots
Boilers 2 of 3-drum type
Oil fuel, tons 300

Capable was built by Hall Russell, *Careful* by A. Hall & Co, *Expert* and *Nimble* by Fleming & Ferguson. Launch dates above. *Capable* was fitted experimentally with controllable pitch propellers. A photograph of *Expert* appears in the 1963-64 to 1966-67 editions.

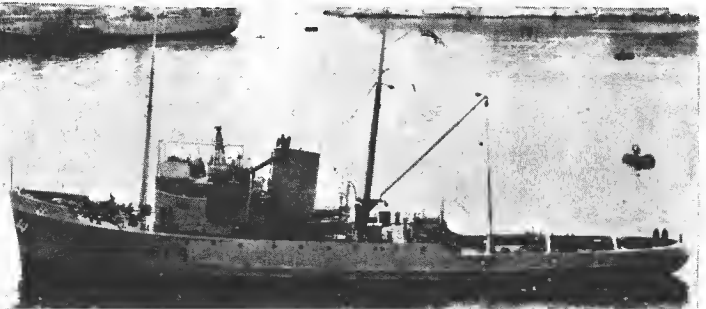


CAPABLE 1967, Skyfotos

6 "Bustler" Class

BUSTLER (4 Dec 1941) A 240 **SAMSONIA** (1 Apr 1942) A 218
CYCLONE (ex-Growler, 10 Sep 1942) A 111 **TURMOIL** (14 July 1944)
REWARD (13 Oct 1944) A 264 **WARDEN** (28 June 1945) A 309
Displacement, tons 1 118 standard; 1 630 full load
Dimensions, feet 190 pp; 205 oa x 40.2 x 16.8
Main Engines 2 Atlas Polar 8-cyl diesels; 1 shaft; 4 000 bhp = 16 knots
Oil fuel, tons 405
Range, miles 17 000
Complement 42

All built by Henry Robb Ltd, Leith. Launch dates above. *Growler*, temporarily renamed *Caroline Moller* while on long term charter, then renamed *Castle Peak*, was returned to R.F.A. service in 1957, then renamed *Welshman* and chartered to the United Towing Co Ltd, and again renamed *Cyclone* on return to Royal Fleet Auxiliary service in 1964. Most of this class, including *Reward*, to United Towing Co Ltd in 1963, and *Turmoil*, to Overseas Towing & Salvage Co, have been chartered by commercial undertakings. *Bustler* wears the Blue Ensign. Of this class, *Hesperia* was lost during the Second World War, and H.M.S. *Mediator*, the last tug to sail under the White Ensign and not the Blue Ensign of the Royal Fleet Auxiliary Service, was paid off in 1964 to be sold.



REWARD Added 1964, A. & J. Pavia

8 "Assurance" Class

ANTIC (Mar 1943) A 141 **JAUNTY** (June 1941) A 140
CAUTIOUS (ex-*Prudent*, Aug 1940) A 385 **PROSPEROUS** (June 1942) A 254
EARNER (ex-*Ernest*, July 1943) A 209 **RESTIVE** (Sep 1940) A 286
HENGIST (Dec 1941) A 110 **SAUCY** (Oct 1942) A 386
Displacement, tons 700 standard; 1 055 full load
Measurement, tons 597 gross
Dimensions, feet 142.5 pp; 157 oa x 33 x 14.8
Main Engines Triple expansion; 1 350 ihp = 12 knots
Boiler 1 cylindrical
Oil fuel, tons 262
Complement 31

All built by Cochrane & Sons Ltd, Selby. Launch dates above. In wartime these ships carried 1—3 inch AA gun, 1—20 mm AA gun and 2 MG. Second World War losses of the class were *Adept*, *Adherent* (original), *Assurance*, *Horsa* and *Sesame*. *Assiduous* was transferred to Ceylon in 1959, *Adherent* (the second) and *Tryphon* were disposed of in 1960. *Alligator* was sold in 1961. *Allegiance* was lost in a typhoon on 4 Sep 1962 while under charter. Other tugs employed on harbour service and in H.M. Dockyards, include diesel-electric paddle tugs *Dexterous*, *Director*, *Faithful*, *Favourite*, *Forceful*, *Grinder* and *Griper*; twin-screw diesel dockyard tugs *Accord*, *Adept*, *Agile* and *Advice*; medium berthing tugs *Airedale*, *Alsatian*, *Boxer*, *Cairn* and *Dalmatian* ("Dog" class); and harbour berthing tugs *Agatha*, *Agnes*, *Alice*, *Audrey* and *Betty* ("Girl" class). Also the small fleet servicing and coastal harbour tugs *Empire Ace* (ex-*Diligent*), *Empire Demon*, *Empire Fred*, *Empire Netta*, *Empire Rosa*, *Energetic* (ex-*Empire Edward*) and *Frisky* (ex-*Empire Rita*), not all of the same type. *Empire Plane* was sold in 1958, and *Empire Zona* was deleted from the list. The following tugs are also in the Port Auxiliary Service.—*Bombshell*, *Cannon*, *Chainshot*, *Destiny*, *Diver*, *Driver*, *Eminent*, *Energy*, *Expeller*, *Fidget*, *Flamer*, *Foremost*, *Freedom*, *Grapeshot*, *Handmaid*, *Impetus*, *Integrity*, *Prompt*, *Regard*, *Resolve*, *Security*, *Tampeon*, *Truncheon*, *Vagrant*, and *Weasel*.

UNITED STATES NAVY

Administration

Commander-in-Chief:
President of the United States Mr. Lyndon B. Johnson

Secretary of Defence:
Honorable Robert S. McNamara

Secretary of the Navy:
Honorable Paul R. Ignatius

Under Secretary of the Navy:
Honorable Charles F. Baird

Assistant Secretary of the Navy (Installations and Logistics):
Honorable Graeme C. Bannerman

Assistant Secretary of the Navy (Research and Development):
Honorable Robert A. Frosch

(There are three Assistant Secretaries of the Navy, the other being for Financial Management)

Command

(Not necessarily in order of seniority)

Chief of Naval Operations:
Admiral Thomas H. Moorer, USN

Vice Chief of Naval Operations:
Admiral Horacio Rivero, Jr, USN
(There are six Deputy C.N.O.s and 14 Assistant C.N.O.s)

Chief of Naval Material:
Admiral Ignatius J. Galantin, USN

Commander in Chief, US Naval Forces, Europe:
Admiral John S. McCain, Jr, USN

Commander in Chief, Allied Forces, Southern Europe:
Admiral Charles D. Griffin, USN

US Representative to NATO Military Committee:
Admiral Alfred G. Ward, USN

Commander in Chief, US Atlantic Fleet:
Admiral Ephraim P. Holmes, USN

Commander in Chief, US Pacific Fleet:
Admiral Roy L. Johnson, USN

Chief of Naval Personnel:
Vice Admiral Benedict J. Semmes, Jr, USN

Chief of Naval Air Training:
Vice Admiral Alexander S. Heyward, Jr, USN

Commander, First Fleet:
Vice Admiral Bernard F. Roeder, USN

Commander, Second Fleet:
Vice Admiral Charles K. Duncan, USN

Commander, Sixth Fleet:
Vice Admiral William I. Martin, USN

Commander, Seventh Fleet:
Vice Admiral John J. Hyland, USN

Commander, Amphibious Force, Pacific:
Vice Admiral Francis J. Blouin, USN

Commander, Naval Air Force, Atlantic:
Vice Admiral Charles T. Booth, USN

Commander, Naval Air Force, Pacific:
Vice Admiral Allen M. Shinn, USN

Commander, Submarine Force, Atlantic:
Vice Admiral Arnold F. Schade, USN

Commander Eastern Sea Frontier:
Vice Admiral Andrew McB. Jackson, USN

Director of Defence Supply Agency:
Vice Admiral Joseph M. Lyle, USN

Marine Corps

Commandant of the Marine Corps:
General Wallace M. Greene, Jr, USMC

Assistant Commandant of the Marine Corps:
Lieutenant General Richard C. Mangrum, USMC

Chief of Staff:
Lieutenant General Leonard F. Chapman, Jr, USMC

Diplomatic Representation

Naval Attaché and Naval Attache for Air in London:
Rear-Admiral Louis J. Kirn, USN

British Naval Attache in Washington:
Rear Admiral Louis E. S. H. Le Bailly, OBE

Term Naval Plan

By 1972 it is planned that there will be:
106 nuclear powered submarines, including 41 armed with Polaris or Poseidon ballistic missiles.

It is intended that eventually there will be:
150 ships with nuclear powered machinery; 200 ships with surface to air guided missiles; All combatant ships armed with anti-submarine missiles or equipped with anti-submarine aircraft.

1968 New Construction Programme

Long lead items for third Nuclear Powered Attack Aircraft Carrier, CVAN, which will be authorised in the Fiscal year 1969 New Construction Programme.

- 3 Nuclear Powered Submarines, SSN
(1 with electric drive, a prototype design to reduce noise)
- 2 Nuclear Powered Guided Missile Frigates, DLGN
- 10 Escort Ships, DE, (to be fitted with VDS)
- 7 Ocean Minesweepers, MSO
- 2 Ammunition Ships, AE
- 1 Combat Store Ship, AFS
- 1 Fast Combat Support Ship ADE
- 2 Oceanographic Research Ships, AGOR
- 1 Submarine Rescue Ship, ASR
(5 FDL and 2 DDG were deleted by the House/Senate Committees)

1968 Conversion Programme

- 3 Nuclear Powered Ballistic Missile Submarines, SSBN
- 1 Guided Missile Frigate DLG to AAW
- 7 Destroyers, DD, to ASW
- 9 Ocean Minesweepers, MSO
- 1 Submarine Tender, AS

1967 New Construction Programme

- 1 Nuclear Powered Attack Aircraft Carrier, CVAN
- 5 Nuclear Powered Submarines, SSN
- 1 Nuclear Powered Guided Missile Frigate (Destroyer Leader), DLGN
- 10 Escort Ships, DE
- 1 Dock Landing Ship, LSD
- 11 Tank Landing Ships, LST
- 5 Ocean Minesweepers, MSO (deferred)
- 2 Ammunition Ships, AE
- 1 Combat Store Ship, AFS
- 2 Replenishment Fleet Oilers, AOR
- 1 Oceanographical Research Ship, AGOR
- 2 Survey Ships, AGS
- 1 Submarine Rescue Ship, ASR
- 2 Salvage Tugs, ATS
- 1 Fleet Ocean Tug, ATF

1967 Conversion Programme

- 1 Guided Missile Cruiser, CG
- 5 Frigates (Destroyer Leaders), DL
- 5 Destroyers, DD
- 2 Military Sea Transportation Service Tankers, T-AO (deferred)

1966 New Construction Programme

- 6 Nuclear Powered Attack Submarines, SSN
- 1 Nuclear Powered Guided Missile Frigate, DLGN
- 1 Amphibious Assault Ship, LPH
- 1 Amphibious Transport Dock, LPD
- 10 Escort Ships, DE
- 1 Amphibious Force Flagship, AGC
- 3 Dock Landing Ships, LSD
- 8 Tank Landing Ships, LST
- 4 Ocean Minesweepers, MSO
- 1 Submarine Tender, AS
- 1 Destroyer Tender, AD (cancelled)
- 10 Motor Gunboats, PGM
- 2 Hydrofoil Gunboats, PGH
- 1 Attack Cargo Ship, AKA
- 2 Ammunition Ships, AE
- 1 Combat Store Ship, AFS
- 1 Fast Combat Support Ship, AOE
- 2 Replenishment Fleet Oilers, AOR
- 2 Fast Deployment Logistic Ships, AG
- 2 Oceanographical Research Ships, AGOR
- 1 Survey Ship, AGS
- 1 Salvage Tug, ATS

1966 Conversion Programme

- 1 Attack Aircraft Carrier, CVA
- 1 Guided Missile Cruiser, CG
- 2 Guided Missile Frigates, DLG
- 5 Destroyers, DD
- 1 Special Minesweeper, MSS
- 2 MSTs Tankers, T-AO (deferred)

Strength of the Fleet

- 1 Nuclear Powered Aircraft Carrier

16 Large Attack Aircraft Carriers

11 Support Aircraft Carriers

9 Helicopter Carriers, Amphibious

5 Aircraft Transports, ex-Carriers

15 Aircraft Ferries, ex-Carriers

2 Communications Ships, ex-Carriers

41 Missile Nuclear Powered Submarines

39 Fleet Nuclear Powered Submarines

127 Diesel Powered Submarines

4 Battleships

5 Flagships

1 Missile Nuclear Powered Cruiser

11 Guided Missile Cruisers

25 Cruisers, 2 Experimental

2 Missile Nuclear Powered Frigates

28 Guided Missile Frigates, Leaders

3 Frigates, Destroyer Leaders

25 Guided Missile Destroyers

320 Destroyers

10 Destroyer Minelayers

3 Guided Missile Escort Ships

258 Escort Ships, Destroyer Escorts
- 23 Fast Transports, ex-Destroyer Escorts

11 Assault Ships, Amphibious Transports

6 Seaplane Carriers, 1 Missile Ship

1 Fleet Minelayer, Cruiser

3 Mine Countermeasures Support Ships

15 Submarine Support Ships, Tenders

16 Destroyer Parent Ships, Tenders

1 Inshore Fire Support Ship

10 Escorts, Patrol Vessels

60 Ocean Minesweepers, Non-Magnetic

40 Fleet Minesweepers, Steel

30 Coastal Minesweepers, Wooden

2 Inshore Minesweepers

18 Patrol Vessels

7 Gunboats, PGs

10 Fast Patrol Boats, MTBs

28 Dock Landing Ships

110 Tank Landing Ships

14 Medium Landing Ships

24 Attack Transports

16 Military Sea Service Transports

20 Attack Cargo Ships

34 Cargo Ships
- 23 Missile Range Ships

30 Repair Ships

6 Technical Research Ships

26 Survey Ships

18 Salvage Vessels

2 Hospital Ships

20 Ammunition Ships

25 Stores Issue Ships

3 Vehicle Cargo Ships

6 Combat Store Ships

4 Fast Combat Support Ships

3 Missile Resupply Ships

4 Cable Repair Ships

10 Submarine Rescue Ships

44 Minesweeping Boats

8 Depot Ships

83 Utility Landing Craft

23 Special Project Ships

16 Petrol Carriers

59 Fleet Oilers

104 Swifts, Patrol Craft

160 River Patrol Boats

1 270 Tugs, Service Craft

Nomenclature

Aircraft carriers are named mostly after historical naval vessels or battles; heavy cruisers and light cruisers after large cities; destroyer leaders (frigates) after Admirals; destroyers after officers and enlisted men of the Navy and Marine Corps, Secretaries of the Navy, Members of Congress and inventors. Destroyers escort and destroyer escort transports are named after Navy men, Marines, or Coast Guard personnel killed in action during the Second World War, the Korean War, and the Vietnam War. Submarines are named after fish and marine creatures (ballistic missile submarines after men famous in American history); ocean minesweepers and fleet minesweepers after abstract qualities, etc, and birds; escorts and submarine chasers after small cities and towns. Submarine tenders are named after pioneers in submarine development and mythological characters; destroyer tenders after geographical valleys, etc; repair ships after mythological characters. Ammunition ships are named after volcanoes and ingredients of explosives; transports after flag and general officers, Commandants of the Marine Corps and Marine Corps officers; attack transports after counties; inshore minesweepers after seaboard features. Amphibious assault ships are named after battles or operations in which Marine Corps forces made history; and amphibious transports dock after cities named for explorers and developers of America. Tank landing ships are named after counties; and medium landing ships, rockets, after rivers. Submarine rescue ships are named after birds; oilers after rivers with Indian names; ocean-going tugs after Indian tribes; and harbour tugs after Indian Chiefs and words of the Indian dialect. Occasional exceptions to this system will be found. Ships' names are prefaced by USS (United States Ship) or USNS (US Naval Ship—ships of the Military Sea Transportation Service).

Ships

In the Fiscal Year 1967 there were 940 active major warships and 8,300 naval aircraft. All ships are painted light grey overall, except submarines, most of which are painted black, with large serial numbers on the bows, except aircraft carriers. Aircraft carriers are differentiated by their serial numbers painted on the funnels and identified from the air by the same figures painted prominently on the flight deck forward and aft. Destroyers carry numbers on their bows, on their sterns, and also on their helicopter platforms for identification from the air. Submarines carry numbers on their "sails" or conning towers and also on their bows.

Personnel

Navy: 669,992 officers and enlisted men on 30 June 1964; 671,009 on 30 June 1965; 745,205 on 30 June 1966; 748,773 on 30 June 1967. *Marine Corps:* 190,000 officers and enlisted men on 30 June 1964; 190,187 on 30 June 1965; 261,716 on 30 June 1966; 280,000 on 30 June 1967.

Navy Appropriations

1955 \$ 9,766,000,000	1959 \$ 11,958,000,000	1963 \$ 15,270,000,000
1956 \$ 9,648,000,000	1960 \$ 11,326,000,000	1964 \$ 14,490,000,000
1957 \$ 10,478,000,000	1961 \$ 12,276,411,000	1965 \$ 14,809,000,000
1958 \$ 10,696,000,000	1962 \$ 14,771,000,000	1966 \$ 14,965,100,000

Mercantile Marine

Lloyds' Register of Shipping:
Sea 3,037 vessels of 18,855,754 tons, gross
Great Lakes 295 vessels of 1,941,681 tons gross
Total 3,332 vessels of 20,797,435 tons gross

Anti-Submarine Weapons

- WEAPON

ALFA

RUR-4A
- A 12.75 in. anti-submarine rocket weighing 500 lbs, fired at a detected submarine from a launcher with an almost circular field of fire.
- ASROC

(Anti Submarine Rocket)

RUR-5A
- Ballistic ASW rocket developed by Honeywell, operational since 1961. Payload can be either a Gen Elect Mk 44 acoustic-homing torpedo or nuclear depth charge, which enters water after aerial trajectory to vicinity of target. Length 15 ft. Weight approx. 1,000 lb.

In 146 ships by 1966. To be fitted in all new escort type ships.
- SUBROC

(Submarine Rocket)

UUM-44A
- Developed by Goodyear Aerospace Corporation, a 4,000 lb rocket-propelled missile about 21 ft in length, launched from surfaced, or from submerged submarines, emerges from the water and is guided by self-containing inertial guidance system in aerial trajectory, of 30 to 50 miles to the vicinity of the target to dive on enemy submarines. Has range considerably greater than present ASW weapons.

Nuclear warhead. Fired from 21 inch torpedo tube. Side torpedo tubes of "Thresher" class.
- ASTOR
- A wire-guided rocket-boosted anti-submarine torpedo with nuclear warhead, in production by Westinghouse. Extremely high reliability and accuracy. Capable of destroying deep-diving, high speed submarines. Weight over 2,000 lb. Range about 11 miles.
- DASH

QH-50C
- Drone anti-submarine helicopter for use by destroyers. Helicopter carries two ASW torpedoes released remotely by destroyer after being positioned over target. Operational in many destroyers.

The Norwegian designed ASW missile system TERNE 3 in escorts *Charles Berry* and *McMorris* was removed in 1964, and "Terne" is no longer in the US Navy.

UNITED STATES NAVY CARRIER BORNE AIRCRAFT

Name	Maker	Type	Dimensions	Power Plant	Armament	Performance	Notes
CRUSADER II F-8D and E	Ling Temco- Vought	Single-Seat Fighter	Wing Span 35' 2" Folded 22' 6" Length 54' 5.5"	One Pratt & Whitney J57 turbojet with afterburner	Four 20 mm cannon, missiles, unguided rock- ets or bombs	Max Speed 1 200 mph Range 500 miles	RF-8A is lower-powered photo. recon. version. RF-8A being converted to RF-8G
F-III B (TFX)	General Dynamics ; Grumman	Two-Seat Fighter	Wing Span 70' 0" spread 33' 11" swept Length 66' 9"	Two Pratt & Whitney TF 30 turbofans with afterburners	Six Phoenix missiles or bombs, rockets, etc	Max speed 1 650 mph	29 ordered for development and test
PHANTOM II F-4B F-41	McDonnell	Two-Seat All weather Fighter	Wing Span 38' 5" Folded 27' 6.5" Length 58' 3"	Two General Electric J79 turbojets with afterburners	Missiles, bombs, rockets	Max speed 1 500 mph Range 1 800- 2 100 miles	Replaced all Skyrays, Demons and early model Crusaders
SKYWARRIOR A-3B	Douglas	Attack Bomber	Wing Span 72' 6" Length 76' 4"	Two Pratt & Whitney J57 turbojets	Two 20 mm cannon, and 12 000 lb of nuclear weapons or bombs	Max speed 610 mph Range over 2 800 miles	EA-3B is radar counter- measures version. RA-3B is photo recon version. TA-3B bombardier trainer
SKYHAWK A-4E A-4F	Douglas	Single-Seat Light Attack Bomber	Wing Span 27' 5" Length 42' 10.8"	One Pratt & Whitney J52 turbojet	Two 20 mm cannon 8 200 lb torpedoes, missiles, rockets, bombs or nuclear weapons	Max speed 680 mph Range over 2 000 miles	A-4A, B and C are earlier versions with less-powerful Wright J65 engine and smaller weapon load
VIGILANTE A-5A	North American	Two-seat Attack Bomber	Wing Span 53' 0" Length 73' 2.5"	Two General Electric J79 turbojets with afterburners	Includes air-to-surface missiles and thermo- nuclear weapons	Max speed over 1 300 mph Range over 2 000 miles	Weapons ejected from tunnel in tail. RA-5C more fuel, reconnaissance equip- ment. Most built or con- verted to RA-5C standard
INTRUDER A-6A	Grumman	Two-Seat Attack Bomber	Wing Span 53' 0" Folded 25' 2" Length 54' 7"	Two Pratt & Whitney J52 turbojets	15 000 lb of missiles and bombs	Max speed 720 mph at sea level	For high-subsonic attack at low levels in all weathers, by day and night. Also EA-6A/B for BCM
CORSAIR II A-7A	Ling-Temco- Vought	Single-Seat Light Attack Aircraft	Wing Span 38' 8.8" Length 46' 1.5"	One Pratt & Whitney TF30 turbofan	Two 20 mm cannon, 20 000 lb of bombs, air-to-air missiles	Max speed 578 mph at sea level	Developed from F-8 Cru- sader
TRACKER S-2D S-2E	Grumman	Four-seat Submarine Search and Attack	Wing Span 72' 7" Folded 27' 4" Length 43' 6"	Two Wright R-TB20- 82A engines	Homing torpedoes, atomic depth charges, rockets, etc	Max Speed at sea level 280 mph Range 1 350 miles	S-2A and C are earlier versions with shorter span and length. TRACER E-1B is radar early warning version
HAWKEYE E-2A	Grumman	Five-Seat Early-Warning Aircraft	Wing Span 80' 7" Length 56' 4" Radome 24'	Two Allison T56 turbo props	None	Max speed 297 mph Endurance 7 hours	Carries radar "Saucer" above fuselage
TRADER C-1A	Grumman	Transport	Wing Span 72' 7" Length 43' 6"	Two Wright R-1820- 82 engines	None	Max speed 265 mph	Development of Tracker for "carrier on board" delivery. Nine passengers
GREYHOUND C-2A	Grumman	Transport	Wing Span 80' 7" Length 56' 6"	Two Allison T56 turbopens	None	Max speed 330 mph Range 1 500 miles	Development of Hawkeye for "carrier on board" deliv- ery. Replaces C-1A, 10 000 lbs cargo or 28 passengers
UH-43C	Kaman	Four or Five-Seat Helicopter	Rotor Dia 47' 0" Fuselage Length 25' 0"	One Pratt & Whitney R-1340-48 radial en- gine	None	Max speed 109 mph Range 220 miles	OH-43D similar
SEASPRITE UH-2A and B	Keman	Multi-Seat Helicopter	Rotor Dia 44' 0" Fuselage Length 36' 7"	One General Electric T58 shaft-turbine	None	Max speed 162 mph Range 670 miles	For transport (11 passen- gers), rescue and ambu- lance duties
SEABAT SH-34J	Sikorsky	Anti- Submarine Helicopter	Rotor Dia 56' 0" Fuselage Length 46' 9"	One Wright R-1B20- B4 radial air-cooled engine	Homing torpedo	Max speed 123 mph Range 248 miles	Also Marine UH-34D Seahorse Utility version
SEA KING SH-3A SH-3D	Sikorsky	Four-Seat Anti-Submarine Helicopter	Rotor Dia 62' 0" Fuselage Length 54' 9"	Two General Electric T58 shaft-turbine engines	840 lb of Homing tor- pedoes and rockets	Max speed 160 mph Range 540 miles	Amphibious. First USN anti-submarine hunter
SEA KNIGHT CH-46A CH-46D	Vertol (Boeing)	Assault Transport Helicopter	Rotor Dia 50' 0" Fuselage Length 44' 10"	Two General Electric T58 shaft-turbines engines	None	Max speed 186 mph Range 265 miles	For Marines. Crew of 3, 25 troops or 6 300 lb cargo. UH-46A ship replenishment helicopter similar
SEA STALLION CH-53A	Sikorsky	Assault Helicopter	Rotor Dia 72' 0" Fuselage Length 67' 2"	Two General Electric T64 shaft-turbine engines	None	Max speed 195 mph Range 280 miles	Marine Corps 38 troops or 8 000 lbs cargo

UNITED STATES NAVY GUIDED MISSILES

Category	Name	Maker	Overall Length Ft.	Propulsion	Speed Mach	Range Miles	Guidance System	Notes
AIR TO AIR								
	SPARROW IIIB AIM-7E	Raytheon	12	Rocketdyne Solid propellant	2+	8	Semi-active homing	Arms Phantom II fighter. Also Sea Sparrow ship-to-air version
	SIDEWINDER 1A AIM-9B	Philco and General Electric	9.2	Naval Powder Plant Solid propellant	2.5	2.1	Infra-red-homing	
	SIDEWINDER 1C AIM-9D	Raytheon	9.4	Solid propellant			Infra-red-homing	
AIR TO SURFACE								
	BULLPUP AGM-12B	Martin and Maxson	10.5	Thiokol liquid pro- pellent (storable)	1.8	7	Command	Built around standard 250 lb bomb and other war- heads. Improved AGM-12C also in production
	SHRIKE AGM-45A	Texas Instruments/ Sperry		Rocketdyne Solid propellant		approx 10	Passive Radar homing	Anti-Radar missile.
	CONDOR	N Am Av Co					TV from A-6A	Officially described as "Development Status"
	WALLEYE	Martin	11.25	None (glide bomb)			TV from launch Aircraft	Built around 1 000 lb bomb
SURFACE TO AIR*								
	TALOS RIM-8D and E	Bendix	31.3	Bendix ramjet. Solid Propellant booster	2.5	65 slant	Beam riding cruise phase. Semi-active homing	Carried by cruisers. High explosive or nuclear war- head.
	STANDARD MISSILE RIM-66A/67A (SUCCESSOR TO TERRIER-TARTAR)	General Dynamics	approx 15	Solid propellant		15 miles. 50 000 ft alt. 30+		Tartar replacement 10 nau- tical miles. Terrier replace- ment with booster, dropped after launch, 30 nautical miles range. 12 in. dia. (2 versions: Medium Range and External Range). *May also be: Surface-to- Surface.
	ADVANCED TERRIER RIM-2	General Dynamics	27	Allegany Ballistics Solid propellant. Solid propellant booster	3.0	20 slant	Homing all the way	Carried by frigates and smaller warships, as well as large ships.
	TARTAR (Improved) RIM-24B	General Dynamics	15	Aerojet General Solid propellant	2.5	over 10 slant	Radar	Carried by destroyers and as secondary armament in cruisers
SURFACE TO SURFACE								
	POLARIS							
	A1 UGM-27A	Lockheed	28.5	Aerojet-General or Hercules Powder Solid propellant	10	1 380	Inertial	(All removed)
	A-2 UGM-27B	Lockheed	31		10	1 725	(MIT design)	Bombardment weapon of Fleet Ballistic Missile Sys- tem, in "Ethan Allen" class and "George Washington" class nuclear powered fleet ballistic missile armed sub- marines, each carrying 16 missiles and capable of sub- merged launch
	A-3 UGM-27C	Lockheed	31		10	2 875	(Manufacturers GE & Hughes Aircraft	
	POSEIDON B-3	Lockheed	34	Hercules Powder and Thiokol solid propellant		2 900	Same as Polaris	Twice destructive power and accuracy of A-3. Available 1970. Multiple warheads for "Lafayette" class nuclear powered fleet ballistic mis- sile armed submarines.

UNITED STATES NAVY SERIAL NUMBERS

**CVAN—Nuclear Powered
Attack Aircraft Carriers**

- 65 Enterprise
6B Nimitz

CVA—Attack Aircraft Carriers

- 14 Ticonderoga
19 Hancock
31 Bon Homme Richard
34 Oriskany
38 Shangri-La
41 Midway
42 Franklin D. Roosevelt
43 Coral Sea
59 Forrestal
60 Saratoga
61 Ranger
62 Independence
63 Kitty Hawk
64 Constellation
66 America
67 John F. Kennedy

CVS—Support Aircraft Carriers

- 9 Essex
10 Yorktown
11 Intrepid
12 Hornet
15 Randolph
16 Lexington
18 Wasp
20 Bennington
33 Kearsarge
36 Antietam
39 Lake Champlain

**LPH—Helicopter Carriers
(Amphibious Assault Ships)**

- 2 Iwo Jima
3 Okinawa
4 Boxer (ex-CVS 21)
5 Princeton (ex-CVS 37)
7 Guadalcanal
8 Valley Forge (ex-CVS 45)
9 Guam
10 Tripoli
11 New Orleans
12

**AVT—Auxiliary Aircraft
Transports**

- 2 Monterey (ex-CVL 26)
5 San Jacinto (ex-CVL 30)
10 Leyte (ex-CVS 32)
11 Philippine Sea (ex-CVS 47)
12 Tarawa (ex-CVS 40)

**AKV—Aircraft Ferry and
Cargo Ships**

- 8 Kula Gulf (ex-CVE 108)
9 Cape Gloucester (ex-CVHE 109)
11 Vella Gulf (ex-CVHE 111)
12 Siboney (ex-CVE 112)
14 Rendova (ex-CVE 114)
16 Badoeing Strait (ex-CVE 116)
17 Saidor (ex-CVHE 117)
19 Point Cruz (ex-CVE 119)
21 Rabaul (ex-CVHE 121)
23 Tinian (ex-CVHE 123)
37 Commencement Bay (ex-CVHE 105)
40 Card (ex-CVU 11, ex-CVHE 11)
41 Core (ex-CVU 13, ex-CVHE 13)
42 Breton (ex-CVU 23, ex-CVHE 23)
43 Croatan (ex-CVU 25, ex-CVHE 25)

**AGMR—Major Communications
Relay Ships**

- 1 Annapolis (ex-Gilbert Islands, AKV 39, ex-CVE 107)
2 Arlington (ex-Saipan, ex-CC 3, ex-AVT 6, ex-CVL 48)

BB—Battleships

- 61 Iowa
62 New Jersey
63 Missouri
64 Wisconsin

CC—Command Ships

- 1 Northampton (ex-CLC 1, ex-CA 125)
2 Wright (ex-AVT 7, ex-CVL 49)

**CGN—Nuclear Powered Guided
Missile Cruiser**

- 9 Long Beach

CG—Guided Missile Cruisers

- 10 Albany
11 Chicago
12 Columbus

**CAG—Guided Missile Heavy
Cruisers**

- 1 Boston
2 Canberra

**CLG—Guided Missile Light
Cruisers**

- 3 Galveston
4 Little Rock
5 Oklahoma City
6 Providence
7 Springfield
8 Topeka

CA—Heavy Cruisers

- 68 Baltimore
71 Quincy
72 Pittsburgh
73 St. Paul
75 Helena
122 Oregon City
124 Rochester
130 Bremerton
131 Fall River
132 Macon
133 Toledo
134 Des Moines
135 Los Angeles
139 Salem
148 Newport News

CL—Light Cruisers

- 65 Pasadena
90 Astoria
101 Amsterdam
102 Portsmouth
103 Wilkes Barre
104 Atlanta (IX 304)
106 Fargo
144 Worcester
145 Roanoke

**CLAA—Anti-Aircraft Light
Cruiser**

- 120 Spokane (T-AG 191)

**DLGN—Nuclear Powered
Guided Missile Destroyer
Leaders (Frigates)**

- 25 Bainbridge
35 Truxtun

**DLG—Guided Missile
Destroyers Leaders (Frigates)**

- 6 Farragut
7 Luce
8 Macdonough
9 Coontz
10 King
11 Mahan
12 Dahlgren
13 William V. Pratt
14 Dewey
15 Preble
16 Leahy
17 Harry E. Yarnell
18 Worden
19 Dale
20 Richmond K. Turner
21 Gridley
22 England
23 Halsey
24 Reeves
26 Belknap
27 Josephus Daniels
28 Wainwright
29 Jouett
30 Horne
31 Sterett
32 William H. Standley
33 Fox
34 Biddle

DL—Destroyer Leaders (Frigates)

- 1 Norfolk (ex-CLK 1)
4 Willis A. Lee (ex-DD 929)
5 Wilkinson (ex-DD 930)

DDG—Guided Missile Destroyers

- 2 Charles F. Adams (ex-DDG 952)
3 John King (ex-DDG 953)
4 Lawrence (ex-DDG 954)
5 Claude V. Ricketts (ex-Biddle) (ex-DDG 955)
6 Barney (ex-DDG 956)
7 Henry B. Wilson (ex-DDG 957)
8 Lynde McCormick (ex-DDG 958)
9 Towers
10 Sampson
11 Sellers
12 Robinson
13 Hoel
14 Buchanan
15 Berkeley
16 Joseph Strauss
17 Conygham
18 Semmes
19 Tattnall
20 Goldsborough
21 Cochrane
22 Benjamin Stoddert
23 Richard E. Byrd
24 Waddell
31 Decatur (ex-DD 936)
32 John Paul Jones (ex-DD 932)
33 Parsons (ex-DD 933)
34 Somers (ex-DD 947)
35 Mitscher (ex-DL 2, ex-DD 927)
36 John S. McCain (ex-DL 3, ex-DD 928)

DD—Destroyers

- 422 Mayo
423 Gleaves
424 Niblack
425 Madison
428 Charles F. Hughes
432 Kearny
435 Grayson
437 Woolsey

DD—Destroyers—continued

- 440 Ericsson
441 Wilkes
443 Swanson
445 Fletcher
446 Radford
447 Jenkins
448 La Vallette
449 Nicholas
450 O'Bannon
455 Hambledon
462 Fitch
466 Waller
468 Taylor
470 Bache
471 Beale
475 Hudson
478 Stanley
479 Stevens
480 Halford
489 Mervine
490 Quick
491 Farenholt
492 Bailey
493 Carmick
494 Doyle
495 Endicott
496 McCook
497 Frankford
498 Philip
499 Renshaw
501 Schroeder
507 Conway
508 Cony
510 Eaton
511 Foote
513 Terry
517 Walker
519 Daly
528 Mullany
530 Trathen
531 Hazelwood
534 McCord
535 Miller
536 Owen
537 Sullivans
538 Stephen Potter
540 Twining
541 Yarnall
544 Boyd
547 Cowell
553 John D. Henley
554 Franks
558 Laws
561 Pritchett
562 Robinson
563 Ross
564 Rowe
566 Stoddard
567 Watts
568 Wren
573 Harrison
574 John Rodgers
575 McKee
577 Sproston
578 Wickes
580 Young
585 Haraden
587 Bell
588 Burns
589 Izard
590 Paul Hamilton
594 Hart
595 Metcalfe
596 Shields
597 Wiley
598 Bancroft
600 Boyle
601 Champlin
602 Meade
603 Murphy
604 Parker
606 Coghlan
607 Frazier
608 Gansevoort
609 Gillespie
610 Hobby
611 Kalk
613 Laub
614 Mackenzie
615 McLanahan
616 Nields
617 Ordonaux
618 Davison
619 Edwards
621 Jeffers
623 Nelson
626 Satterlee
627 Thompson
628 Welles
629 Abbott
630 Braine
632 Cowie

USN Serial Numbers—continued

DD—Destroyers—continued

634 Doran
 635 Earle
 637 Gerhardi
 638 Herndon
 641 Tillman
 643 Sigourney
 645 Stevenson
 646 Stockton
 647 Thorn
 649 Albert W. Grant
 650 Caperton
 651 Cogswell
 652 Ingersoll
 653 Knapp
 654 Bears
 658 Colehan
 659 Dashiell
 660 Bullard
 661 Kidd
 662 Bennion
 665 Bryant
 666 Black
 667 Chauncey
 669 Cotton
 671 Gatling
 672 Healy
 674 Hunt
 676 Marshall
 679 McNair
 681 Hopewell
 682 Porterfield
 683 Stockham
 684 Wedderburn
 685 Picking
 686 Halsey Powell
 687 Uhlmann
 688 Remy
 690 Norman Scott
 691 Mertz
 692 Allen M. Sumner
 693 Moale
 694 Ingraham
 696 English
 697 Charles S. Sperry
 698 Ault
 699 Waldron
 700 Haynsworth
 701 John W. Weeks
 702 Hank
 703 Wallace L. Lind
 704 Borie
 705 Compton
 706 Gainard
 707 Soley
 708 Harlan R. Dickson
 709 Hugh Purvis
 710 Gearing
 711 Eugene A. Greene
 712 Gyatt (ex-DDG 1,
 ex-DDG 712
 713 Kenneth D. Bailey/DDR
 714 William R. Rush
 715 William M. Wood
 716 Wiltsie
 717 Theo E. Chandler
 718 Hammer
 719 Epperson
 722 Barton
 723 Walke
 724 Laffey
 725 O'Brien
 727 De Haven
 728 Mansfield
 729 Lyman K. Swenson
 730 Collett
 731 Maddox
 732 Hyman
 734 Purdy
 742 Frank Knox/DDR
 743 Southerland
 744 Blue
 745 Brush
 746 Taussig
 747 Samuel L. Moore
 748 Harry E. Hubbard
 752 Alfred A. Cunningham
 753 John R. Pierce
 754 Frank E. Evans
 755 John A. Bole
 756 Beatty
 757 Putnam
 758 Strong
 759 Lofberg
 760 John W. Thomason
 761 Buck
 762 Henley
 763 William C. Lawe
 764 Lloyd Thomas
 765 Keppler
 770 Lowry
 775 Willard Keith
 776 James C. Owens
 777 Zellars
 778 Massey
 779 Douglas H. Fox

DD—Destroyers—continued

780 Stormes
 781 Robert K. Huntington
 782 Rowan
 783 Gurke
 784 McKean
 785 Henderson
 786 Richard B. Anderson
 787 James K. Kyes
 788 Hollister
 789 Eversole
 790 Shelton
 793 Cassin Young
 794 Irwin
 795 Preston
 800 Porter
 805 Chevalier
 806 Higbee
 807 Benner
 808 Dennis J. Buckley
 817 Corry
 818 New
 819 Holder
 820 Rich
 821 Johnston
 822 Robert H. McCard
 823 Samuel B. Roberts
 824 Basilone
 825 Carpenter
 826 Agerholm
 827 Robert A. Owens
 829 Myles C. Fox
 830 Everett F. Larson
 831 Goodrich/DDR
 832 Hanson
 833 Herbert J. Thomas
 834 Turner/DDR
 835 Charles P. Cecil
 836 Georges K. Mackenzie
 837 Sarsfield
 838 Ernest G. Small/DDR
 839 Power
 840 Glennon
 841 Noa
 842 Fiske
 843 Warrington
 844 Perry
 845 Bausell
 846 Ozbourn
 847 Robert L. Wilson
 848 Witek
 849 Richard E. Kraus
 850 Joseph P. Kennedy Jr.
 851 Rupertus
 852 Leonard F. Mason
 853 Charles A. Roan
 857 Bristol
 858 Fred T. Berry
 859 Norris
 860 McCaffery
 861 Harwood
 862 Vogelgesang
 863 Steinaker
 864 Harold J. Ellison
 865 Charles R. Ware
 866 Cone
 867 Stribling
 868 Brownson
 869 Arnold J. Isbell
 870 Fechteler
 871 Damato
 872 Forrest Royal
 873 Hawkins
 874 Duncan/DDR
 875 Henry W. Tucker
 876 Rogers
 877 Perkins
 878 Vesole
 879 Leary
 880 Dyess
 881 Bordelon
 882 Furse
 883 Newman K. Perry
 884 Floyd B. Parks
 885 John R. Craig
 886 Orleck
 887 Brinkley Bass
 888 Stickell
 889 O'Hare
 890 Meredith
 931 Forrest Sherman
 933 Barry
 937 George F. Davis
 938 Jonas Ingram
 940 Manley
 941 Dupont
 942 Bigelow
 943 Blandy
 944 Mullinnix
 945 Hull
 946 Edson
 948 Morton
 950 Richard S. Edwards
 951 Turner Joy

DEG—Guided Missile Escort
Ships

1 Brooke
 2 Ramsey
 3 Schofield
 4 Talbot
 5 Richard L. Page
 6 Julius A. Furer

DE—Escort Ships

51 Buckley
 129 Edsall
 130 Jacob Jones
 131 Hammann
 134 Pope
 137 Herbert C. Jones
 138 Douglas L. Howard
 139 Farquhar
 140 J.R.Y. Blakeley
 141 Hill
 145 Huse
 146 Inch
 147 Blair/DER
 149 Chatelain
 150 Neunzer
 151 Poole
 152 Peterson
 153 Reuben James
 162 Levy
 163 McConnell
 164 Osterhaus
 165 Parks
 167 Acree
 170 Booth
 172 Cooner
 180 Trumpeter
 181 Straub
 191 Coffman
 198 Lovelace
 199 Manning
 200 Neuendorf
 201 James E. Craig
 202 Eichenberger
 203 Thomason
 210 Otter
 217 Coolbaugh
 218 Darby
 219 J. Douglas Blackwood
 220 Francis M. Robinson
 224 Rudderow
 225 Day
 231 Hodges
 238 Stewart
 239 Sturtevant/DER
 240 Mqore
 241 Keith
 242 Tomich
 243 J. Richard Ward
 244 Otterstetter/DER
 245 Sloat
 246 Snowden
 247 Stanton
 248 Swasey
 249 Marchand
 250 Hurst
 251 Camp/DER
 252 Howard D. Crow
 253 Pettit
 254 Ricketts
 317 Joyce/DER
 318 Kirkpatrick/DER
 320 Menges
 321 Mosley
 332 Newell/DER
 323 Pride
 324 Falgout/DER
 325 Lowe/DER
 326 Thomas J. Gary/DER
 327 Brister/DER
 328 Finch/DER
 329 Kretschmer/DER
 330 O'Reilly
 331 Koiner/DER
 332 Price/DER
 333 Strickland/DER
 334 Forster/DER
 335 Daniel
 336 Roy O. Hale/DER
 337 Dale W. Peterson
 339 John C. Butler
 340 O'Flaherty

DE—Escort Ship—continued

341 Raymond
 342 Richard A. Suesens
 343 Abercrombie
 345 Robert Brazier
 346 Edwin A. Howard
 347 Jesse Rutherford
 348 Key
 349 Gentry
 350 Traw
 353 Doyle C. Barnes
 354 Kenneth M. Willett
 355 Jaccard
 356 Lloyd E. Acree
 357 George E. Davis
 358 Mack
 360 Johnnie Hutchins
 361 Walton
 362 Rolf
 363 Pratt
 364 Rombach
 365 McGinty
 366 Alvin C. Cockrell
 367 French
 368 Cecil J. Doyle
 369 Thaddeus Parker
 370 John L. Williamson
 371 Presley
 372 Williams
 382 Ramsden/DER
 383 Mills/DER
 384 Rhodes/DER
 385 Richey
 386 Savage/DER
 387 Vance/DER
 388 Lansing/DER
 389 Durant/DER
 390 Calcaterra/DER
 391 Chambers/DER
 392 Merrill
 393 Haverfield/DER
 394 Swenning
 395 Willis
 396 Janssen
 397 Wilhoite/DER
 398 Cockrill
 399 Stockdale
 400 Hissem/DER
 402 Richard S. Bull
 403 Richard M. Rowell
 405 Dennis
 406 Edmonds
 409 La Prade
 410 Jack Miller
 411 Stafford
 412 Walter C. Wann
 414 Le Ray Wilson
 415 Lawrence C. Taylor
 416 Melvin R. Nawman
 417 Oliver Mitchell
 418 Tabberer
 419 Robert F. Keller
 420 Lelend E. Thomas
 421 Chester T. O'Brien
 423 Dufilho
 438 Corbesier
 439 Conklin
 441 William Seiverling
 443 Kendall C. Campbell
 444 Goss
 445 Grady
 446 Charles E. Brannon
 447 Albert T. Harris
 449 Hanna
 450 Joseph E. Connolly
 508 Gilligan
 531 Edward H. Allen
 532 Tweedy
 533 Howard F. Clark
 534 Silverstein
 536 Bivin
 537 Rizzi
 538 Osberg
 539 Wagner/DER
 540 Vandivier/DER
 577 Alexander J. Luke
 578 Robert I. Paine
 579 Riley
 580 Leslie L. B. Knox
 581 McNulty
 582 Metivier
 584 Charles J. Kimmel
 586 Lough
 587 Thomas F. Nickel
 589 Tinsman
 634 Whitehurst
 639 Gendreau
 640 Fieberling
 641 William C. Cole
 642 Paul G. Barker
 643 Damon M. Cummings
 644 Vammen
 667 Wiseman

USN Serial Numbers—continued

DE—Escort Ships—continued

680. Loeser
681. Gillette
683. Henry R. Kenyon
684. De Long
685. Coates
686. Eugene E. Elmore
696. Spangler
697. George
698. Raby
699. Marsh
701. Osmus
702. Earl V. Johnson
703. Holton
704. Cronin
705. Frybarger
700. Jobb
708. Parle
742. Hibert
743. Lamons
744. Kyne
745. Snyder
748. Tills
749. Roberts
750. McClelland
765. Earl K. Olsen
767. Oswald
769. Neal A. Scott
795. Gunason
796. Major
797. Weeden
798. Varian
800. Jack W. Wilke
1006. Dealey
1014. Cromwell
1015. Hammerberg
1021. Courtney
1022. Lester
1023. Evans
1024. Bridget
1025. Bauer
1026. Hopper
1027. John Willis
1028. van Voorhis
1029. Hartley
1030. Joseph K. Taussig
1033. Claud Jones
1034. John P. Perry
1035. Charles Berry
1036. McMorris
1037. Bronstein
1038. McCloy
1040. Garcia
1041. Bradley
1043. Edward McDonnell
1044. Brumby
1045. Davidson
1047. Voge
1048. Sample
1049. Koelsch
1050. Albert David
1051. O'Callahan
1052. Knox
1053. Roark
1054. Gray
1055. Hepburn
1056. Connole
1057. Rathburne
1058. Mayerkord
1059. W. S. Sims
1060. Lang
1061. Patterson
1062. Whipple
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SSBN—Nuclear Powered Fleet
Ballistic Missile Submarines

598. George Washington
599. Patrick Henry
600. Theodore Roosevelt
601. Robert E. Lee
602. Abraham Lincoln
608. Ethan Allen
609. Sam Houston
610. Thomas A. Edison
611. John Marshall
616. Lafayette
617. Alexander Hamilton
618. Thomas Jefferson
619. Andrew Jackson
620. John Adams
622. James Monroe
623. Nathan Hale
624. Woodrow Wilson
625. Henry Clay
626. Daniel Webster
627. James Madison
628. Tecumseh
629. Daniel Boone
630. John C. Calhoun
631. Ulysses S. Grant
632. Von Steuben
633. Casimir Pulaski
634. Stonewall Jackson
635. Sam Rayburn
636. Nathanael Greene
640. Benjamin Franklin
641. Simon Bolivar
642. Kamehameha
643. George Bancroft
644. Lewis and Clark
645. James K. Polk
654. George C. Marshall
655. Henry L. Stimson
656. George Washington Carver
657. Francis Scott Key
658. Mariano G. Vallejo
659. Will Rogers

SSN—Nuclear Powered
Attack Submarines

571. Nautilus
575. Seawolf
578. Skate
579. Swordfish
583. Sargo
584. Seadragon
585. Skipjack
586. Triton (ex-SSRN)
587. Halibut (ex-SSGN)
588. Scamp
589. Scorpion
590. Sculpin
591. Shark
592. Snook
594. Permit
595. Plunger
596. Barb
597. Tullibee
603. Pollack
604. Haddock
605. Jack
606. Tinsosa
607. Dace
612. Guardfish
613. Flasher
614. Greenling
615. Gato
621. Haddock
637. Sturgeon
638. Whale
639. Tautog
646. Grayling
647. Pogy
648. Aspro
649. Sunfish
650. Pargo
651. Queenfish
652. Puffer
653. Ray
660. Sand Lance
661. Lapon
662. Gurnard
663. Hammerhead
664. Sea Devil
665. Guitarro
666. Hawkbill
667. Bergall
668. Spadefish
669. Seahorse
670. Finback
671. Narwhal
672. Pintado
673. Flying Fish
674.
675.
676.
677.

SS—Submarines

214. Grouper AGSS (ex-SSK)
224. Cod AGSS
225. Cero AGSS
228. Drum AGSS
236. Silversides AGSS
240. Angler AGSS (ex-SSK)
241. Bashaw AGSS (ex-SSK)
242. Bluegill AGSS (ex-SSK)
243. Bream AGSS (ex-SSK)
244. Cavalla AGSS (ex-SSK)
245. Cobia AGSS
246. Croaker (ex-SSK)
256. Hake AGSS
269. Rasher AGSS (ex-SSR)
270. Raton AGSS (ex-SSR)
272. Redfin AGSS (ex-SSR)
274. Rock AGSS (ex-SSR)
282. Tunny APSS
286. Billfish AGSS
287. Bowfin AGSS
288. Cabrilla AGSS
291. Crevalle AGSS
297. Ling AGSS
298. Lionfish AGSS
299. Manta AGSS
300. Moray AGSS
301. Roncador AGSS
302. Sabalo
303. Sablefish
310. Batfish
311. Archerfish AGSS
313. Perch APSS
315. Sealion APSS
318. Baya AGSS
319. Becnua
322. Blackfin
323. Caiman
324. Blenny
328. Charr
331. Bugara
334. Cabezon AGSS
335. Dentuda AGSS
337. Carbonero (ex-SSG)
338. Carp
339. Catfish
340. Entemedor
341. Chivo
342. Chopper
343. Clagamore
344. Cobbler
346. Corporal
347. Cubera
348. Cusk (ex-SSG)
349. Diodon
350. Dogfish
351. Greenfish
352. Halfback
365. Hardhead
368. Jallao
374. Loggerhead AGSS
377. Menhaden
382. Picuda
383. Pampanito AGSS
384. Parche AGSS
385. Bang AGSS
391. Pomfret
392. Sterlet
394. Razorback
396. Ronquil
398. Segundo
399. Seacat
401. Seadog AGSS
402. Seafox
403. Atule
405. Sea Owl
406. Sea Poacher
407. Sea Robin
408. Sennet
409. Piper
410. Threadfin
411. ex-Spadefish AGSS
412. Trepang AGSS
416. Tiru
417. Tench
418. Thornback
419. Tigrone (ex-SSR) AGSS
420. Tirante
421. Trutta
423. Torsk
424. Quillback
425. Trumpetfish
426. Tusk
475. Argonaut
476. Runner
478. Cutlass
480. Medregal
481. Requin (ex-SSR)
482. Irex
483. Sea Leopard
484. Odax

SS—Submarines—continued

485. Sirago
486. Pomodon
487. Remora
489. Spinax AGSS (ex-SSR)
490. Volador
522. Amberjack
523. Grampus
524. Pickerel
525. Grenadier
555. Dolphin AGSS
563. Tang
564. Trigger
565. Wahoo
566. Trout
567. Gudgeon
568. Harder
569. Albacore AGSS
572. Sailfish (ex-SSR)
573. Salmon (ex-SSR)
547. Grayback APSS (ex-SSG)
576. Darter
577. Growler (SSG)
580. Barbel
581. Blueback
582. Bonefish

SST—Target Submarines

1. Mackerel
2. Marlin
3. Barracuda (ex-SSK 1)

DM—Destroyer Minelayers

23. Robert E. Smith
24. Thomas E. Fraser
25. Shannon
26. Harry F. Bauer
27. Adams
28. Tolman
29. Henry A. Wiley
30. Shea
32. Lindsey
33. Gwin

MMF—Fleet Minelayer

5. Terror

MCS—Mine Countermeasures
Support Ships

1. Catskill
2. Ozark
7. Epping Forest

MSO—Ocean Minesweepers

421. Agile
422. Aggressive
423. Avenge
424. Bold
425. Bulwark
426. Conflict
427. Constant
428. Dash
429. Detector
430. Direct
431. Dominant
432. Dynamic
433. Elusive
434. Embattle
435. Endurance
436. Energy
437. Enhance
438. Esteem
439. Excel

USN Serial Numbers—continued

MSO—Ocean Minesweepers—
continued

440 Exploit
441 Exultant
442 Fearless
443 Fidelity
444 Firm
445 Force
446 Fortify
447 Guide
448 Illusive
449 Impervious
455 Implicit
456 Inflict
457 Loyalty
458 Lucid
459 Nimble
460 Notable
461 Observer
462 Pinnacle
463 Pivot
464 Pluck
466 Prime
467 Reaper
468 Rival
469 Sagacity
470 Salute
471 Skill
472 Valour
473 Vigor
474 Vital
488 Conquest
489 Gallant
490 Leader
491 Persistent
492 Pledge
493 Stalwart
494 Sturdy
495 Sweave
496 Venture
508 Acme
509 Adiot
510 Advance
511 Affray
519 Ability
520 Alacrity
521 Assurance

MHC—Coastal Minehunters

43 Bittern

MSC—Coastal Minesweepers

121 Bluebird
122 Cormorant
190 Falcon
191 Frigate Bird
192 Humming bird
193 Jacana
194 Kingbird
195 Limpkin
196 Meadow Lark
197 Parrot
198 Peacock
199 Phoebe
201 Shrike
203 Thrasher
204 Thrush
205 Vireo
206 Warbler
207 Whippoorwill
208 Widgeon
209 Woodpecker
289 Albatross
290 Gannet

MSC(O)—Old Coastal
Minesweepers

24 Linnet
33 Plover
47 Fulmar
49 Lorikeet
51 Reedbird
54 Ruff
56 Turkey
58 Siskin

ARVH—Aircraft Repair Ship
(Helicopter)

1 Corpus Christi Bay
(ex-Albemarle, AV 5)

AVM—Guided Missile Ship

1 Norton Sound (ex-AV 11)

AV—Seaplane Tenders

7 Currituck
10 Chandeleur
12 Pine Island
13 Salisbury Sound

PCE—Escorts

856 Whitehall
877 Havre
880 Ely
902 Portage

PCER—Rescue Escorts

850 Fairview
851 Rockville
853 Amherst
855 Rexburg
857 Marysville

PCS—Wooden Submarine
Chasers

1385 Hollidaysburg
1387 Beaufort

AGC—Amphibious Force
Flagships

7 Mount McKinley
11 Eldorado
12 Estes
16 Pocono
17 Taconic
19 Blue Ridge
20

LPD—Assault Ships
(Amphibious Transports Dock)

1 Raleigh
2 Vancouver
3 La Salle
4 Austin
5 Ogden
6 Duluth
7 Cleveland
8 Dubuque
9 Denver
10 Juneau
11 Coronado
12 Shreveport
13 Nashville
14 Trenton
15 Ponce
16

APD—Modified Destroyer
Escorts (High Speed
Transports)

43 George W. Ingram (ex-DE 62)
48 Blessman (ex-DE 69)
55 Laning (ex-DE 159)
57 Barber (ex-DE 161)
60 Liddle (ex-DE 206)
61 Kephart (ex-DE 207)
65 Burke (ex-DE 215)
70 Pavlic (ex-DE 669)
73 Basset (ex-DE 672)
76 Schmitt (ex-DE 676)
86 Hollis (ex-DE 794)
89 Ruchamkin (ex-DE 228)
90 Kirwin (ex-DE 229)
95 William M. Robby (ex-DE 236)
100 Ringness (ex-DE 590)
101 Knudson (ex-DE 591)
119 Beverly W. Reid (ex-DE 722)
123 Diachenko (ex-DE 690)
124 Horace A. Bass (ex-DE 691)
127 Begor (ex-DE 711)
130 Cook (ex-DE 714)
132 Baldock (ex-DE 716)
135 Weiss (ex-DE 719)

WHEC—High Endurance Cutters

31 Bibb
32 Campbell
33 Duane
35 Ingham
36 Spencer
37 Taney

39 Owasco
40 Winnebago
41 Chautauqua
42 Sebago
44 Wachusett
64 Escanaba
65 Winona
66 Klamath
67 Minnetonka
68 Androscoggin
69 Mendota
70 Pontchartrain

370 Casco
371 Mackinac
372 Humboldt
373 Matagorda
374 Absecon
375 Chincoteague
376 Coos Bay
377 Rockway
378 Half Moon
379 Unimac
380 Yakutat
381 Barataria
382 Bering Strait
383 Castle Rock
384 Cook Inlet
385 Dexter
386 McCulloch
387 Gresham

715 Hamilton
716 Dallas
717 Mellon
718 Chase
719 Boutwell
720 Sherman
721 Gallatin
722

WMEC—Medium Endurance
Cutters

615 Reliance
616 Diligence
617 Vigilant
618 Active
619 Confidence
620 Resolute
621 Valiant
622 Courageous
623 Steadfast
624 Dauntless
625 Venturous
626 Dependable
627 Vigorous
628 Durable
629 Decisive
630 Alert

101 Ariadne
103 Aurora
116 Triton
126 Agassiz
127 Alert
131 Cahoon
132 Cartigan
137 Ewing
140 General Green
143 Kimball
144 Legare
146 McLane
147 Morris
156 Yeaton

MSF—Fleet Minesweepers

55 Raven
58 Broadbill
64 Starling
101 Herald
104 Pilot
105 Pioneer
111 Sage
118 Steady
120 Sway
122 Swift
123 Symbol
124 Threat
127 Tumult
128 Velocity
165 Counsel
215 Cruise
240 Hazard
280 Prowess
304 Scurry
306 Spectre
307 Staunch
308 Strategy
309 Strength
311 Superior
314 Champion
315 Chief
316 Competent
317 Defense
318 Devastator
319 Gladiator
320 Impeccable
322 Spear
340 Ardent
364 Graylag
373 Peregrine (AG 176)
379 Roselle
381 Scoter
384 Sprig
386 Terrel
390 Wheatear

List of classifications of naval vessels and service craft

Every vessel in the Navy List has a distinctive serial number, prefaced by letters denoting the category to which she belongs.

A list of these symbols, with their significance, as officially promulgated, follows:

In the following lists the arrangement within the major categories and sub-categories is alphabetically by symbols. Where the identifying classification and hull number of a naval

vessel or service vessel is preceded by the letter "E" it indicates that the particular vessel or craft is "Experimental". Similarly the prefix "T" indicates that the vessel is assigned to

MSTS (Military Sea Transportation Service). The addition of the suffix "N" to the identifying classification indicates that that particular vessel has nuclear propulsion.

List of Naval Vessel Classifications

a. COMBATANT

(1) Warships

Aircraft Carriers:

Attack Aircraft Carrier	CVA
Nuclear Power Aircraft Carrier	CVAN
ASW Support Aircraft Carrier	CVS

Battleships:

Battleship	BB
------------	----

Cruisers:

Heavy Cruiser	CA
Guided Missile Heavy Cruiser	CAG
Guided Missile Cruiser	CG
Nuclear Power Guided Missile Cruiser	CGN
Light Cruiser	CL
Anti-Aircraft Light Cruiser	CLAA
Guided Missile Light Cruiser	CLG

Destroyers:

Destroyer	DD
Nuclear Power Destroyer	DDN
Guided Missile Destroyer	DDG
Radar Picket Destroyer	DDR
Frigate	DL
Guided Missile Frigate	DLG
Nuclear Power Guided Missile Frigate	DLGN

Submarines

Submarine	SS
Fleet Ballistic Missile Submarine	SSB
Nuclear Power Fleet Ballistic Missile Submarine	SSBN
Guided Missile Submarine	SSG
Nuclear Power Guided Missile Submarine	SSGN
Nuclear Power Submarine	SSN

(2) Amphibious Warfare Ships

Amphibious Force Flagship	AGC
Attack Cargo Ship	AKA
Attack Transport	APA
High Speed Transport	APD
Transport Submarine	APSS
Inshore Fire Support Ship	IFS
Amphibious Transport Dock	LPD
Amphibious Assault Ship	LPH
Dock Landing Ship	LSD
Medium Landing Ship	LSM
Medium Landing Ship (Rocket)	LSMR
Support Landing Ship (Large)	LSSL
Tank Landing Ship	LST
Vehicle Cargo Ship	LSV

(3) Mine Warfare Ships

Minelayer, Destroyer	DM
Mine Countermeasures Support Ship	MCS
Minehunter, Auxiliary	MHA
Minehunter, Coastal	MHC
Minelayer, Fleet	MMF
Minelayer, Auxiliary	MMA
Minelayer, Coastal	MMC
Minesweeper, Auxiliary	MSA
Minesweeper, Coastal	MSC
Minesweeper, Coastal (old)	MSC(O)
Minesweeper, Fleet (steel hulled)	MSF
Minesweeping Launches	MSL
Minesweeper, Ocean (Non-magnetic)	MSO
Minesweeper, Special	MSS

(4) Patrol Ships

Escort Ship	DE
Guided Missile Escort Ship	DEG
Radar Picket Escort Ship	DER
Patrol Air Cushion Vehicle	PACV
Submarine Chaser (173')	PC
Escort (180')	PCE
Rescue Escort (180')	PCER
Patrol Craft Coastal (Fast)	PCF
Submarine Chaser (Hydrofoil)	PCH
Submarine Chaser (136')	PCS
Patrol Escort	PF
Patrol Gunboat	PG
Patrol Gunboat (Hydrofoil)	PGH
Motor Gunboat	PGM
Fast Patrol Boat	PTF
Submarine Chaser (110')	SC

(5) Command Ships

Command Ship	CC
--------------	----

b. AUXILIARY SHIPS

Destroyer Tender	AD
Degaussing Ship	ADG
Ammunition Ship	AE
Store Ship	AF
Combat Store Ship	AFS
Miscellaneous	AG
Icebreaker	AGB
Escort Research Ship	AGDE
Hydrofoil Research Ship	AGEH
Fleet Tactical Command Ship	AGF
Missile Range Instrumentation Ship	AGM
Major Communications Relay Ship	AGMR
Oceanographic Research Ship	AGOR
Radar Picket Ship	AGR
Surveying Ship	AGS
Coastal Surveying Ship	AGSC
Satellite Launching Ship	AGSL
Auxiliary Submarines	AGSS
Technical Research Ship	AGTR
Hospital Ship	AH
Cargo Ship	AK
Cargo Ship, Dock	AKD
Light Cargo Ship	AKL
Net Cargo Ship	AKN
Stores Issue Ship	AKS
Cargo Ship and Aircraft Ferry	AKV
Net Laying Ship	AN
Oiler	AO
Fast Combat Support Ship	AOE
Gasoline Tanker	AOG
Replenishment Oiler	AOR
Submarine Oiler	AOSS
Transport	AP
Self-propelled Barracks Ship	APB
Small Coastal Transport	APC
Repair Ship	AR
Battle Damage Repair Ship	ARB
Cable Repairing or Laying Ship	ARC
Internal Combustion Engine Repair Ship	ARG
Landing Craft Repair Ship	ARL
Salvage Ship	ARS
Salvage Lifting Ship	ARSD
Salvage Craft Tender	ARST
Aircraft Repair Ship	ARV
Aircraft Repair Ship (Aircraft)	ARVA
Aircraft Repair Ship (Engine)	ARVE
Aircraft Repair Ship (Helicopter)	ARVH
Submarine Tender	AS
Submarine Rescue Ship	ASR
Auxiliary Ocean Tug	ATA
Fleet Ocean Tug	ATF
Salvage Tug	ATS
Seaplane Tender	AV
Advance Aviation Base Ship	AVB
Guided Missile Ship	AVM
Small Seaplane Tender	AVP
Aviation Supply Ship	AVS
Auxiliary Aircraft Transport	AVT
Distilling Ship	AW
Unclassified Miscellaneous	JX

(c) SERVICE CRAFT

Large Auxiliary Floating Dry Dock	AFDB
Small Auxiliary Floating Dry Dock	AFDL
Medium Auxiliary Floating Dry Dock	AFDM
Barracks Ship (non-self-propelled)	APL
Auxiliary Repair Dry Dock	ARD
Medium Auxiliary Repair Dry Dock	ARDM
*Utility Landing Craft (see footnote)	LCU
Minesweeping Boat	MSB
Minesweeper, Inshore	MSI
Target and Training Submarine	SST
Submersible Craft	X
Miscellaneous Auxiliary	YAG
Open lighter	YC
Car Float	YCF
Aircraft Transportation Lighter	YCV
Floating Crane	YD
Diving Tender	YDT
Covered Lighter (self-propelled)	YF
Ferryboat or Launch	YFD
Yard Floating Dry Dock	YFB
Covered Lighter (non-self-propelled)	YFN
Large Covered Lighter	YFNB
Dry Dock Companion Craft	YFND
Lighter (special purpose)	YFNX
Floating Power Barge	YFP
Refrigerated Covered Lighter (self-propelled)	YFR
Refrigerated Covered Lighter (non-self-propelled)	YFRN
Covered Lighter (Range Tender)	YFRT
Harbour Utility Craft	YFU
Garbage Lighter (self-propelled)	YG
Garbage Lighter (non-self-propelled)	YGN
Dredge	YM
Gate Craft	YNG
Fuel Oil Barge (self-propelled)	YO
Gasoline Barge (self-propelled)	YOG
Gasoline Barge (non-self-propelled)	YOGN
Fuel Oil (non-self-propelled)	YON
Oil Storage Barge	YOS
Patrol Craft	YP
Floating Pile Driver	YPD
Floating Workshop	YR
Repair and Berthing Barge	YRB
Repair, Berthing and Messing Barge	YRBM
Repair, Berthing and Messing Barge (Large)	YRBM(L)
Floating Dry Dock Workshop (Hull)	YRDH
Floating Dry Dock Workshop (Mach)	YRDM
Radiological Repair Barge	YRR
Seaplane Wreckage Derrick	YSD
Sludge Removal Barge	YSR
Large Harbour Tug	YTB
Small Harbour Tug	YTL
Medium Harbour Tug	YTM
Drone Aircraft Catapult Control Craft	YY
Water Barge (self-propelled)	YW
Water Barge (non-self-propelled)	YWN

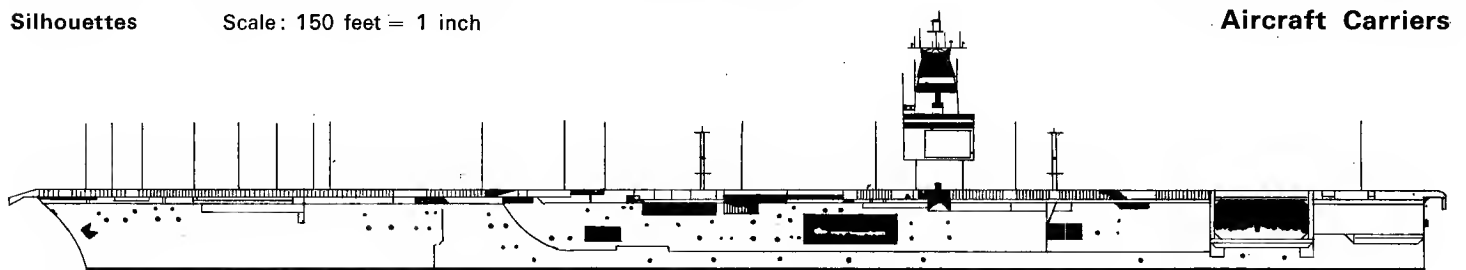
Many of the above types are no longer in the US Navy but are on loan to other countries and therefore remain on the US Navy list.

* Note

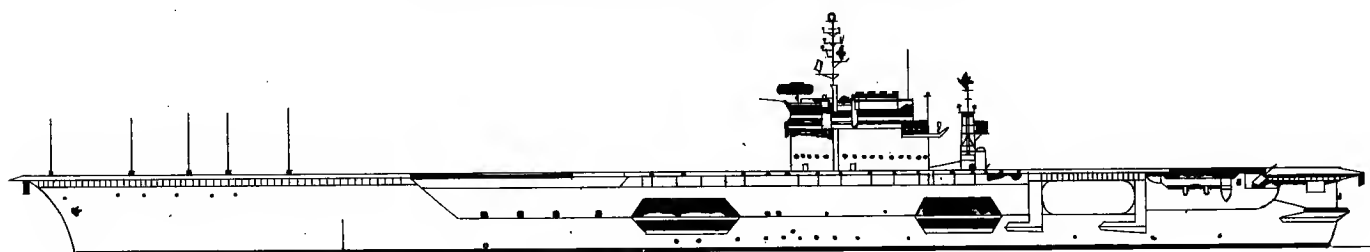
All LCUs, Utility Landing Craft, were reclassified from "Service Craft" to "Boats" in Nov 1958.

Other landing craft (boats) are:—

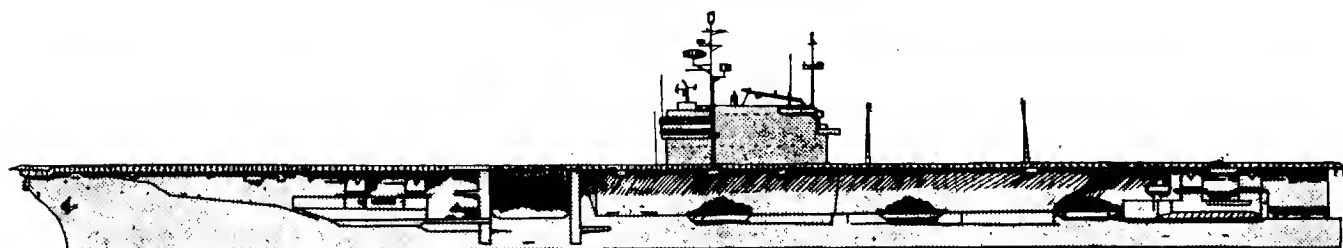
Landing Craft Mechanised III	LCM(3)
Landing Craft Mechanised VI	LCM(6)
Landing Craft Mechanised VIII	LCM(8)
Landing Craft Personnel, Large I	LCPL(1)
Landing Craft Personnel, Large IV	LCPL(4)
Landing Craft Personnel, Large XI	LCPL(11)
Landing Craft Personnel, Ramped	LCP(R)
Landing Craft, Vehicle, Personnel	LCVP



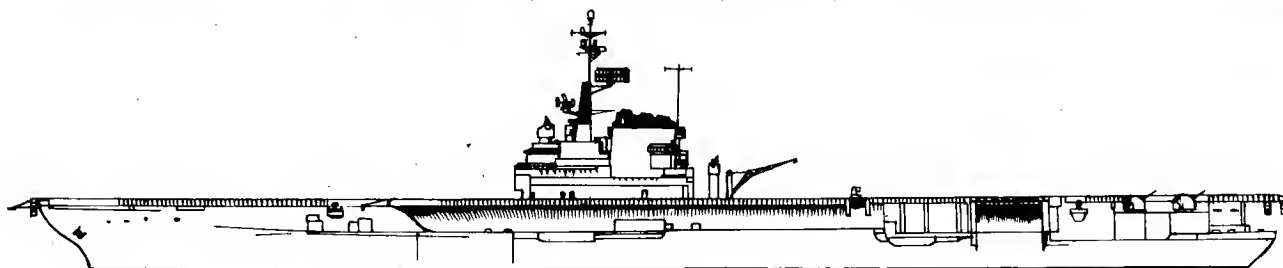
ENTERPRISE. Nuclear Powered Attack Aircraft Carrier



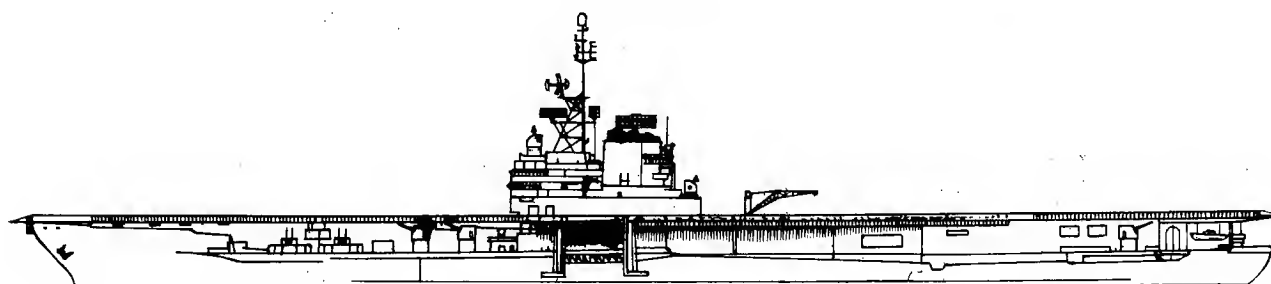
CONSTELLATION, KITTY HAWK



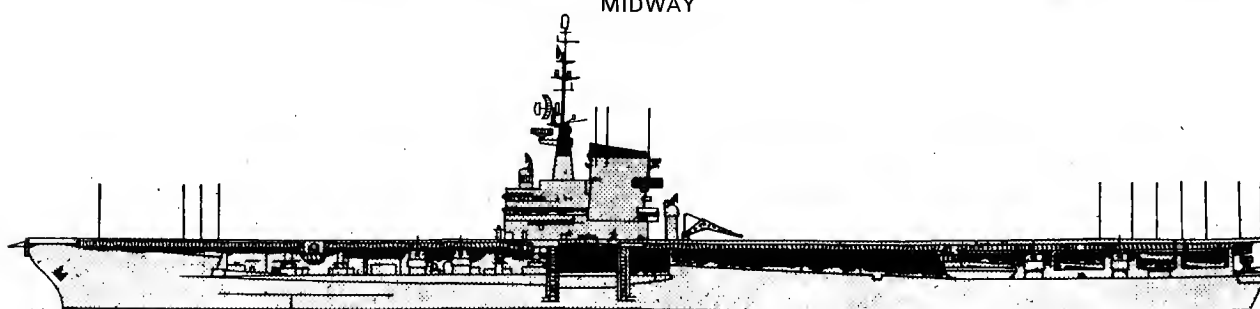
FORRESTAL, INDEPENDENCE, RANGER, SARATOGA



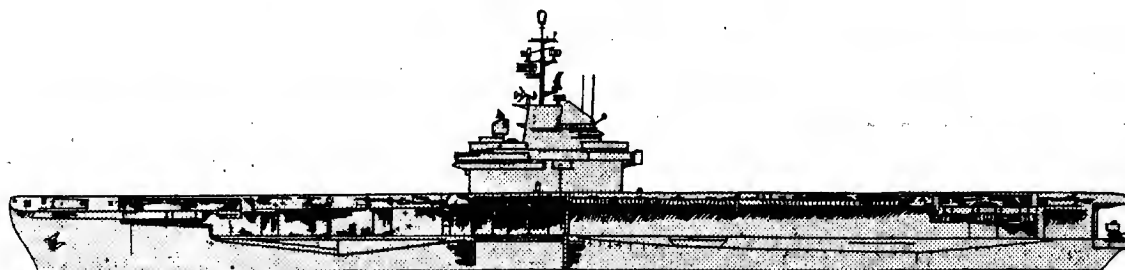
CORAL SEA



MIDWAY



FRANKLIN D. ROOSEVELT

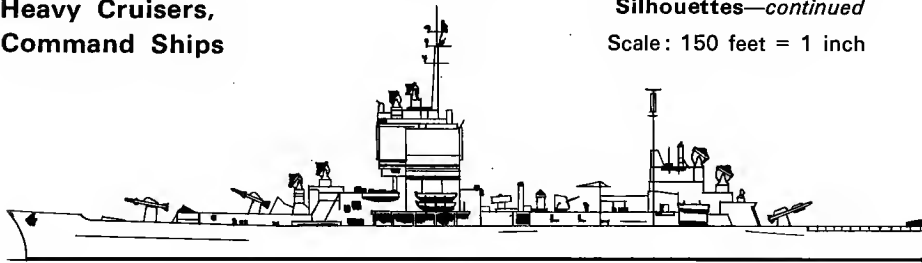


ESSEX Class with angled deck and enclosed bow

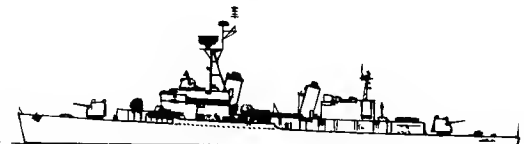
Heavy Cruisers,
Command Ships

Silhouettes—continued
Scale: 150 feet = 1 inch

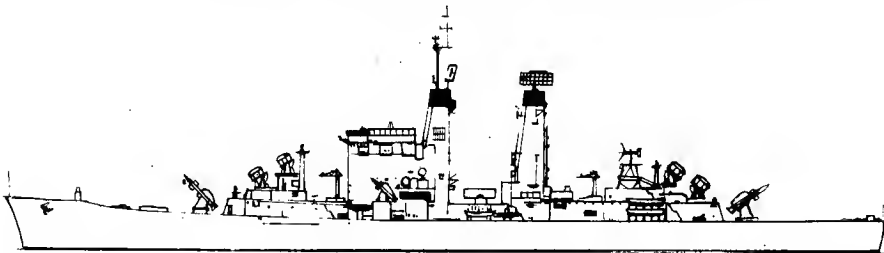
Destroyers



LONG BEACH. Nuclear Powered Guided Missile Cruiser



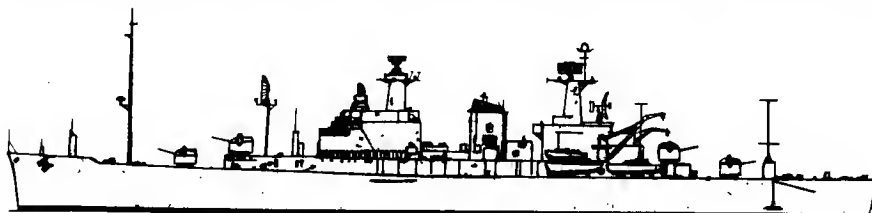
CARPENTER Class FRAM II conversions



ALBANY, CHICAGO COLUMBUS. Guided Missile Cruisers, converted Heavy Cruisers



CARPENTER Class



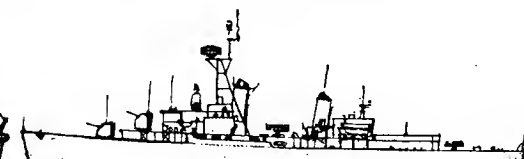
NORTHAMPTON. Command ship. Originally designed as a Heavy Cruiser



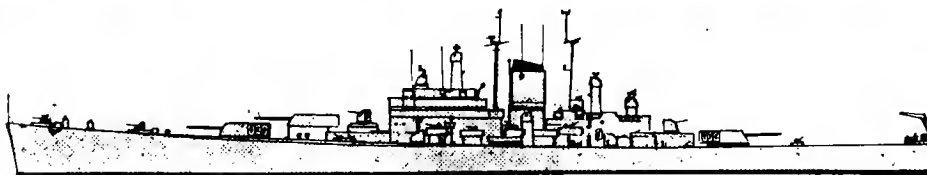
Converted GEARING Class FRAM I



NEWPORT NEWS



GEARING Class FRAM conversions



DES MOINES, SALEM



GEARING Class with tripod mast



OREGON CITY, ROCHESTER



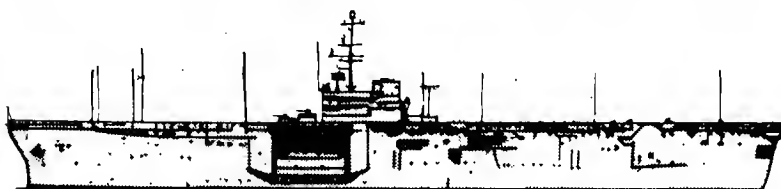
GEARING Class Radar Pickets



WRIGHT. Command Ship. Converted Aircraft Carrier



GEARING Class Radar Pickets with mainmast



IWO JIMA Class. Amphibious Assault Ship (Helicopter Commando Carrier)

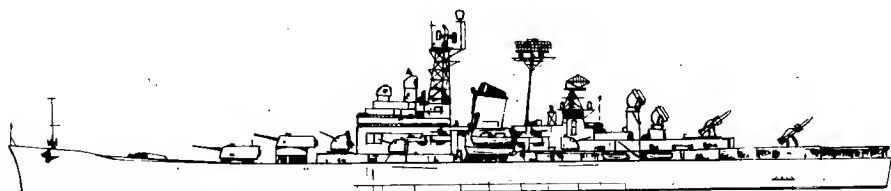


ALLEN M. SUMNER Class with tripod

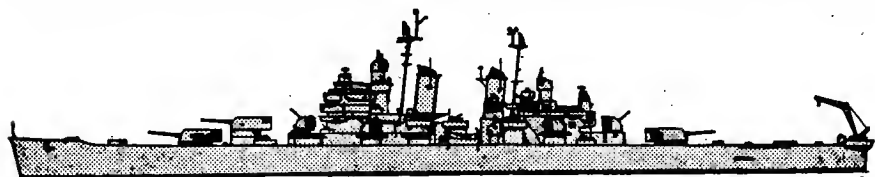
Cruisers

Silhouettes—continued
Scale: 150 feet = 1 inch

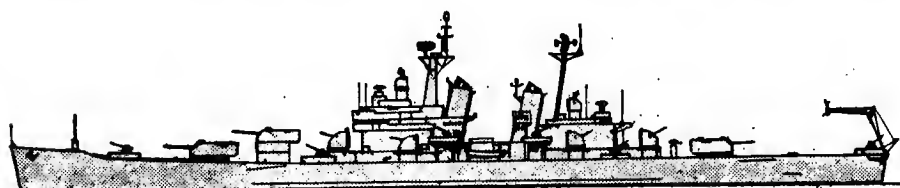
Destroyers



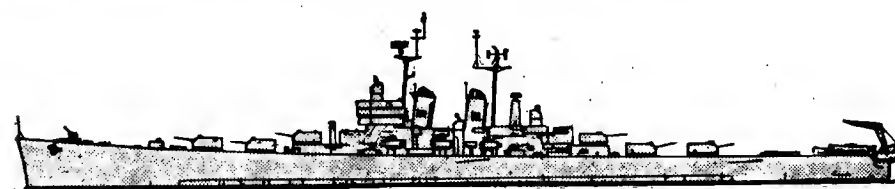
BOSTON (no helo deck), CANBERRA. Guided Missile Heavy Cruisers. Converted



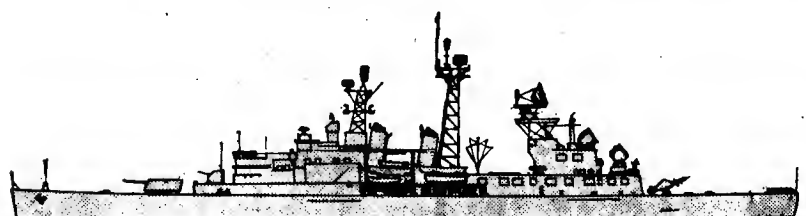
BALTIMORE Class. Heavy Cruisers



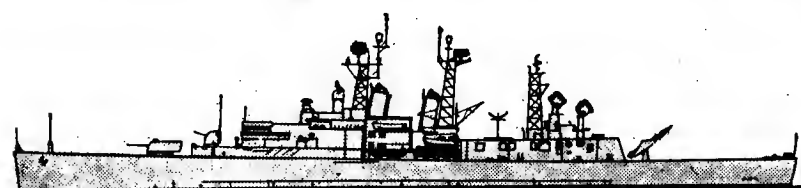
HELENA, ST. PAUL. Heavy Cruisers



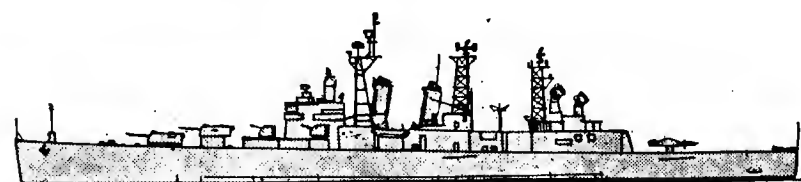
ROANOKE, WORCESTER. Large Light Cruisers



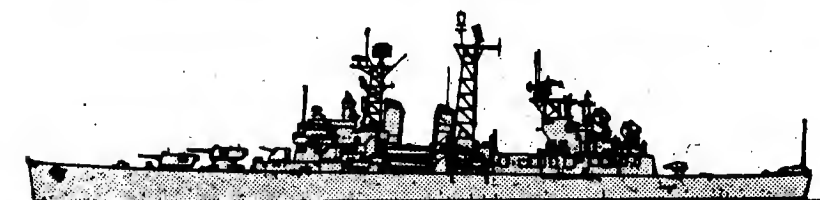
LITTLE ROCK, OKLAHOMA CITY. Guided Missile Light Cruisers. Converted



PROVIDENCE, SPRINGFIELD. Guided Missile Light Cruisers, Converted



TOPEKA. Guided Missile Light Cruiser. Converted



GALVESTON. Guided Missile Light Cruiser. Converted



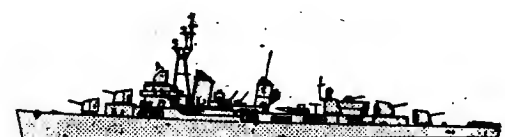
Converted FLETCHER Class FRAM



ALLEN M. SUMNER Class FRAM



FLETCHER Class FRAM Conversions



FLETCHER Class with 4—5" guns



FLETCHER Class with 5—5" guns



Later FLETCHER Class



Converted FLETCHER Class with polemast



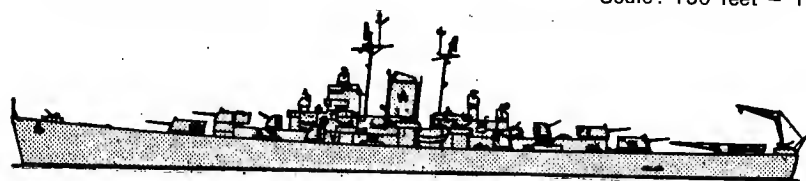
Converted FLETCHER Class with tripod mast

Cruisers, Destroyers

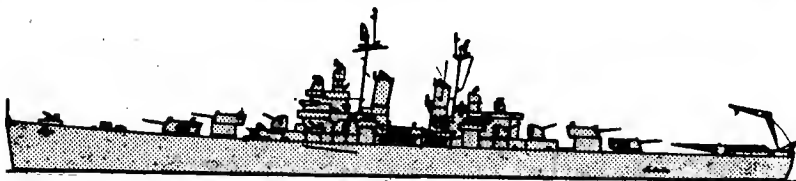
Silhouettes—continued

Scale: 150 feet = 1 inch

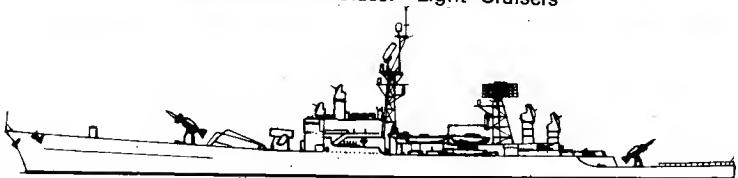
Escort Ships



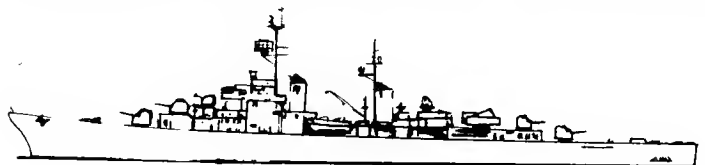
FARGO. Light Cruiser



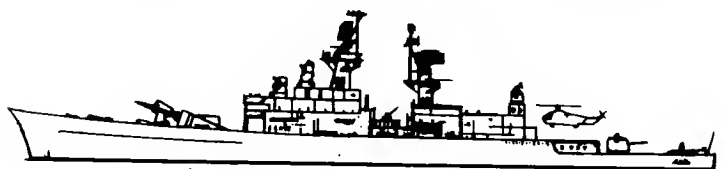
CLEVELAND Class. Light Cruisers



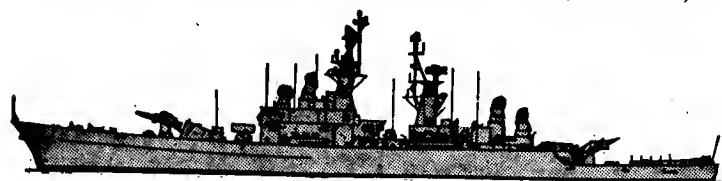
BAINBRIDGE. Nuclear Powered Guided Missile Frigate (Destroyer Leader)



NORFOLK. Frigate. ex-Anti-Submarine Light Cruiser



BELKNAP Class. Guided Missile Frigates (Destroyer Leaders)



LEAHY Class. Guided Missile Frigates (Destroyer Leaders)



CHARLES-F. ADAMS Class. Guided Missile Armed Destroyers



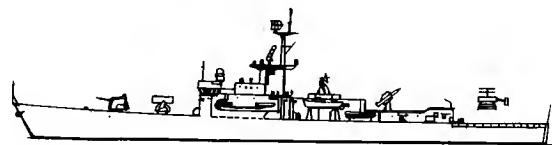
COONTZ Class. Guided Missile Frigates (Destroyer Leaders)



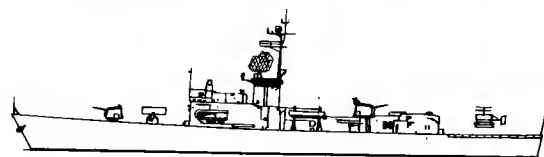
FORREST SHERMAN Class. Large Destroyers



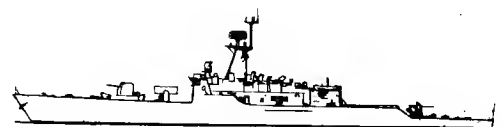
MITSCHER Class. Frigates, ex-Destroyer Leaders



BROOKE Class Guided Missile Escort Ships



GARCIA Class. A/S Escort Ships



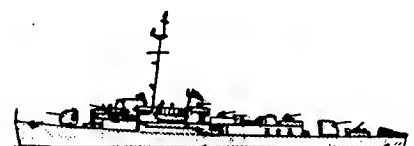
BRONSTEIN Class



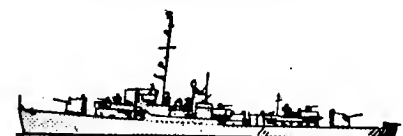
CLAUDE JONES Class



DEALEY Class



RUDDEROW Class



JOHN C. BUTLER Class



BUCKLEY Class with 5" guns



BUCKLEY Class as Radar Picket



EDSALL Type as Radar Picket

NUCLEAR POWERED ATTACK AIRCRAFT CARRIERS (CVAN)

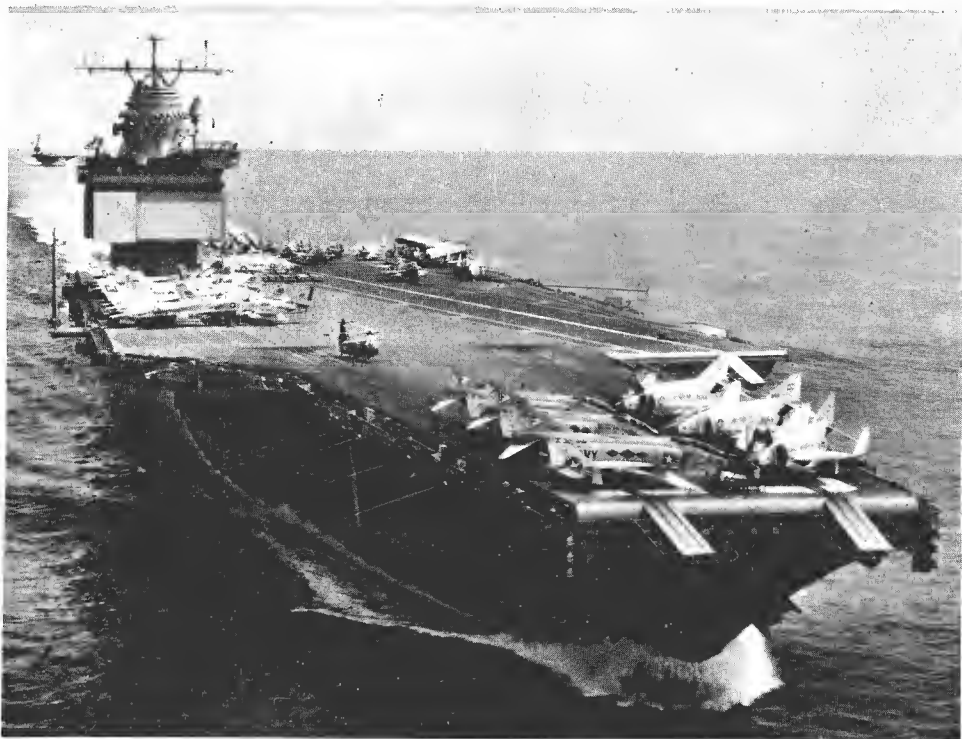
Name	No.	Builders	Engineers	Laid down	Launched	Completed
ENTERPRISE	CVAN 65	Newport News SB & DD Co	Westinghouse Electric	4 Feb 1948	24 Sep 1960	20 Dec 1961
NIMITZ	CVAN 68	Newport News SB & DD Co				

Displacement, tons	75 700 standard, 85 350 full load
Length, feet (metres)	1 040 (317 0) pp; 1 123 (341 3)oa
Beam, feet (metres)	133 (40 5) hull
Draft, feet (metres)	37 (11 3)
Width, feet (metres)	257 (78 3) extreme
Hangar height, feet (metres)	25 (7 6)
Flight deck area	4 5 acres (1 82 hectares)
Catapults	4 steam type C-13
Aircraft	70 to 100, according to type
Nuclear reactors	8 pressurised water cooled type A2W
Main engines	Geared steam turbines
	300 000 shp; 4 shafts
Speed, knots	33 (35 max)
Radius, miles	140 000 at full speed
	400 000 at 20 knots
Complement	2 870 (120 officers, 2 750 men)
	4 300 including air wing
	Accommodation for 414 officers and 4 260 men

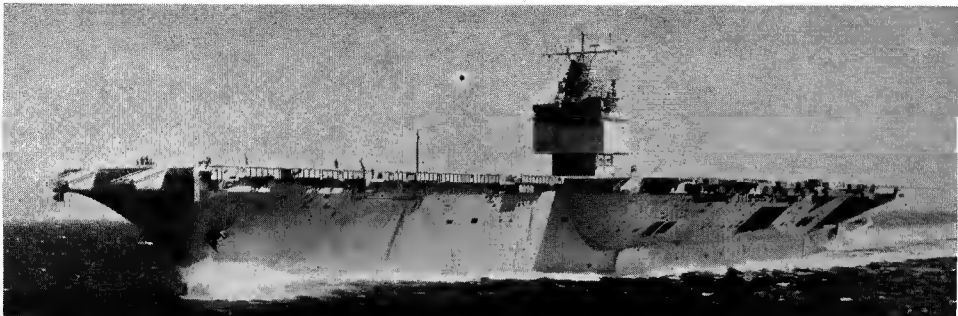
Enterprise is the world's largest aircraft carrier ever built. Provided under the FY 1958 Programme. Advance design and procurement of this first nuclear powered attack aircraft carrier ordered on 16 Aug 1957 was provided in the Fiscal Year 1957 Appropriations. Block island superstructure, no funnels, four deck-edge lifts, three on the starboard side, one on the port. Almost unlimited steaming endurance at high speed without regard to conserving fuel. Capable of steaming for five years without refuelling. Cruising range is equivalent to twenty times around the world. An additional 4,000 sq ft of flight deck permits operation of more and larger aircraft. With nuclear propulsion the ship required no funnels or uptakes, and this reduced the superstructure to improve radar capabilities and simplify damage control. Absence of smoke stacks and boiler air intakes reduces the vulnerability of the power plant to battle damage and eliminates the possibility of radioactivity or biological agents entering the ship. A 'stackless' ship also allows an island configuration facilitating the installation of new high performance radar. Four fixed antennae built into the sides of the island superstructure double former radar ranges. Cost \$444 000 000 (about £158 570 000). Transferred to Pacific Fleet in 1965.

ENGINEERING. The nuclear plant was designed and developed by the Atomic Energy Commission at Bettis, in co-operation with the Navy. Westinghouse obtained the contract on 17 Dec 1957 to design and furnish the reactor compartment components and built the steam propulsion machinery. There are two reactors for each of the four shafts. The eight reactors feed 32 heat exchangers (8 x 37,500 = 300 000). The first reactor became critical on 2 Dec 1960. The ship refuelled for the first time in 1964 during a seven-month overhaul.

PHOTOGRAPHS. Starboard quarter oblique aerial views and a port bow oblique aerial appear in the 1962-63 to 1964-65 editions, a starboard bow oblique aerial view in the 1962-63 to 1965-66 editions, and a bow overhead oblique view looking down the angled deck in the 1965-66 and 1966-67 editions.



ENTERPRISE 1967, United States Navy, Official



ENTERPRISE 1965, United States Navy, Official

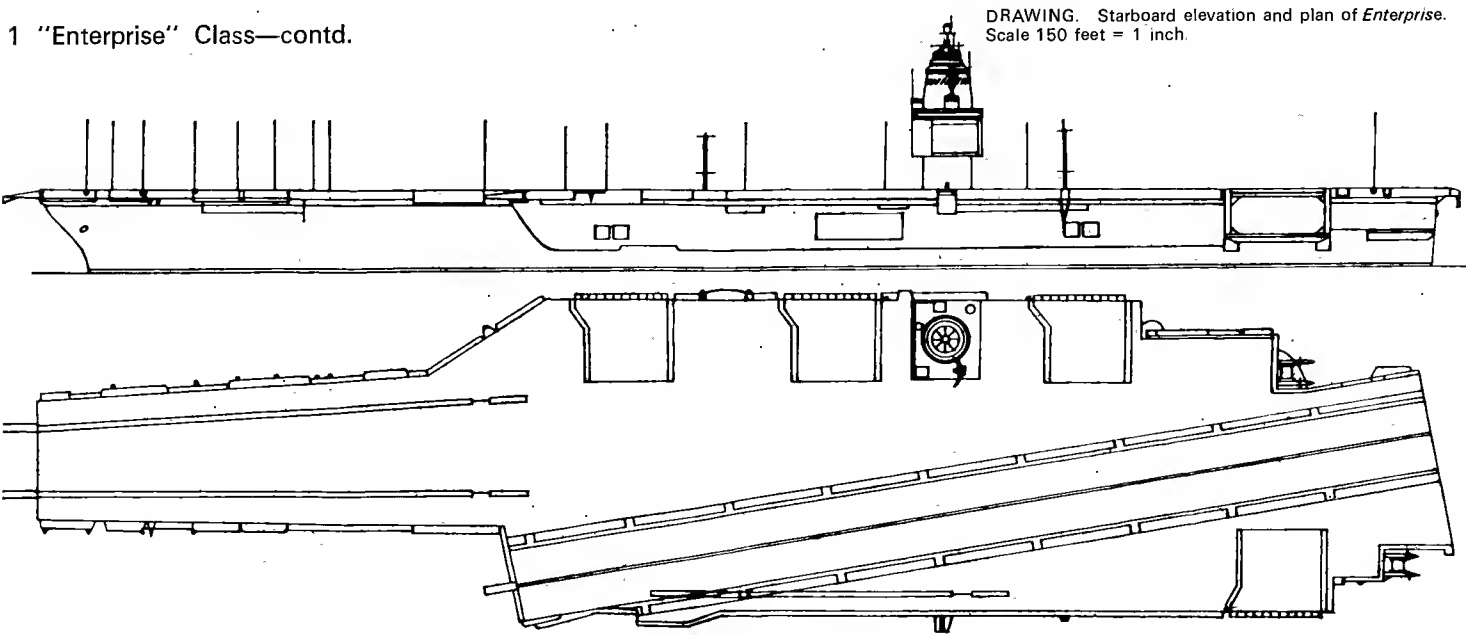
SECOND NUCLEAR POWERED AIRCRAFT CARRIER CVAN 68. In July 1965 the design contract was awarded to Newport News Shipbuilding & Dry Dock Co. Construction authorised in Fiscal Year 1967. To be named after Fleet Admiral Chester W. Nimitz. 91 300 tons full load, 1 092 oa x 134 feet (largest warship in the world, although 31 feet shorter than Enterprise), 2 reactors, to cost \$427 500 000. Two more CVANs are in project.



ENTERPRISE 1966, United States Navy, Official

Nuclear Powered Attack Aircraft Carriers—continued

1 "Enterprise" Class—contd.



ATTACK AIRCRAFT CARRIERS (CVA)

Name	No.	Builders	Laid down	Launched	Completed
AMERICA	CVA 66	Newport News SB & DD Co	9 Jan 1961	1 Feb 1964	23 Jan 1965
JOHN F. KENNEDY	CVA 67	Newport News SB & DD Co	22 Oct 1964	27 May 1967	

2 "America" Class

Displacement, tons	
<i>America</i> :	64 000 standard; 77 600 full load
<i>John F. Kennedy</i> :	67 000 standard; 80 700 full load
Length, feet (metres)	990 (301.8) pp; 1 047.5 (319.3) oa
Beam, feet (metres)	130 (39.6) hull
Draft, feet (metres)	37 (11.3)
Width, feet (metres)	252 (76.8)
Flight deck area	4.5 acres (1.82 hectares)
Catapults	4 steam type C-13
Aircraft	90, including 3 attack (VA) and 2 Fighter (VF) squadrons
Missiles, AA	
<i>America</i> :	2 twin "Terrier" launchers
<i>John F. Kennedy</i> :	2 twin "Tartar" launchers
Boilers	8 Foster Wheeler
	Pressure 1 200 psi (84.4 kg/cm ²)
Main engines	4 geared turbines
	280 000 shp; 4 shafts
Speed, knots	35
Complement	2 670 (120 officers, 2 550 men)
	4 965 including air wing
	Accommodation for 420 officers, 4 200 men

Conventionally powered. *America* was authorised under the 1961 new construction programme. Cost \$293 000 000 (\$156 500 000 for hull and machinery). Main differences between *America* (also CVA 63, 64) and the "Forrestal" class are the different elevator arrangements with two lifts before the bridge on the starboard side and one on the after quarter on the port side; and a more streamlined island. Commissioned on 23 Jan 1965, Atlantic Fleet. The construction of *John F. Kennedy*, authorised two years before, was awarded to Newport News in Apr 1964. Scheduled to be completed by 29 Apr 1968. Cost \$227 198 000.



AMERICA

1967, United States Navy, Official

ELECTRONICS. The design embodies many of the electronic systems of the nuclear powered aircraft carrier *Enterprise*. These include an improved long-range search radar system, the automatic aircraft landing system, bow mounted SOS-23 sonar and the Naval Tactical Data System.

PHOTOGRAPHS. A dead-on aerial bow view of *America* looking along the flight deck appears in the 1965-66 and 1966-67 editions. A starboard near broadside overhead view of *America* showing forward side elevator down appears in the 1965-66 and 1966-67 editions.



AMERICA

1967, United States Navy, Official

6 "Forrestal" Group

Attack Aircraft Carriers—continued

	Name	No.	Builders	Laid down	Launched	Completed
Displacement, tons	FORRESTAL	CVA 59	Newport News SB Co	14 July 1952	11 Dec 1954	1 Oct 1955
	SARATOGA	CVA 60	New York Naval Shipyard	16 Dec 1952	8 Oct 1955	14 Apr 1956
	RANGER	CVA 61	Newport News SB Co	2 Aug 1954	29 Sep 1956	10 Aug 1957
	INDEPENDENCE	CVA 62	New York Naval Shipyard	1 July 1955	6 June 1958	3 Apr 1959
Length, feet (metres)	KITTY HAWK	CVA 63	New York SB Corp, NJ	27 Dec 1956	21 May 1960	9 June 1961
	CONSTELLATION	CVA 64	New York Naval Shipyard	14 Sep 1957	8 Oct 1960	19 Jan 1962
Beam, feet (metres)						
Draft, feet (metres)						
Width, feet (metres)						
Flight deck area						
Catapults						
Aircraft						
Missiles, AA						
Guns, dual purpose						
Boilers						
Main engines						
Speed, knots						
Oil fuel (tons)						
Aviation fuel (tons)						
Complement						

Forrestal (contract awarded on 12 July 1951) was named after the Secretary of Defense who was in office when the subsequently cancelled Heavy Carrier *United States* (CVA 58) was named in 1949. *Ranger* authorised in 1954 Fiscal Year: contract awarded 2 Feb 1954. *Independence* authorised in 1955 Fiscal Year. *Kitty Hawk*, named for the site where the Wright brothers made their historic flights, was first tentatively to have been named *Congress*. Cost \$218 000 000 (*Forrestal*), \$209 700 000 (*Saratoga*), \$182 000 000 (*Ranger*), \$189 311 000 (*Independence*) and \$200 000 000 (*Constellation*). *Independence* commissioned on 10 Jan 1959, *Kitty Hawk* on 2 Apr 1961 and *Constellation* on 27 Oct 1961. During a 6-months overhaul of *Ranger* in 1963-64 eight feet was added to angled deck width to accommodate newer aircraft.

CONSTRUCTION. Four deck edge elevators. Flight deck about 80 feet longer than that in the "Midway" class to operate larger, heavier carrier-based naval aircraft of the newest design. Increased catapult and arresting capacity, larger elevators, higher hangar decks, mirror sight to aid in landing on aircraft, added armour and improved underwater protection. The flight deck is a strength deck by reduction of the opening in the hangar sides, bow enclosed up to the flight deck for seaworthiness in all types of weather, island acoustically constructed to block out external noise, air-conditioned living quarters, three rudders.

OVERHAUL. During her 1965 overhaul the displacement of *Constellation* was increased to 79 000 tons full load and the overall length to 1 072 feet 7 inches, 25 feet longer than listed by builder and 10 feet longer than *Kitty Hawk*, and NTDS and SINS system were fitted.

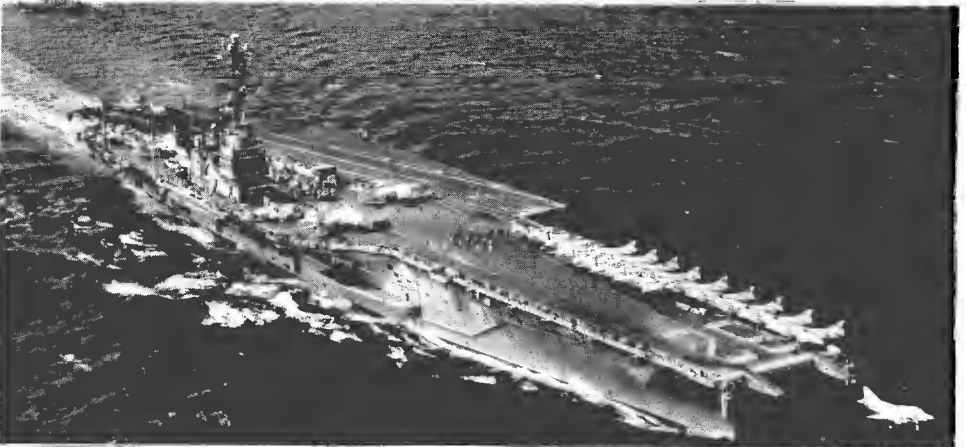
GUNNERY. The forward gun sponsons were removed from *Forrestal*, *Independence*, *Ranger* and *Saratoga*. The sponsons interfered with operations in heavy weather, tending to slow ships down. The sponsons housed 2—5 inch guns each, thus armament was halved, only 4—5 inch mounts remaining in the two after sponsons. Sponsons were not built in *Constellation* and *Kitty Hawk*.

Name	No.	Builders	Laid down	Launched	Completed
FORRESTAL	CVA 59	Newport News SB Co	14 July 1952	11 Dec 1954	1 Oct 1955
SARATOGA	CVA 60	New York Naval Shipyard	16 Dec 1952	8 Oct 1955	14 Apr 1956
RANGER	CVA 61	Newport News SB Co	2 Aug 1954	29 Sep 1956	10 Aug 1957
INDEPENDENCE	CVA 62	New York Naval Shipyard	1 July 1955	6 June 1958	3 Apr 1959
KITTY HAWK	CVA 63	New York SB Corp, NJ	27 Dec 1956	21 May 1960	9 June 1961
CONSTELLATION	CVA 64	New York Naval Shipyard	14 Sep 1957	8 Oct 1960	19 Jan 1962



CONSTELLATION

1967, United States Navy, Official



INDEPENDENCE

1965, United States Navy, Official

ENGINEERING. Two propellers are 4-bladed and two 5-bladed. *Kitty Hawk* has four 5-bladed propellers.

COMPLEMENT. Is being increased by 400 to 800 men per ship for support of new aircraft maintenance.

APPEARANCE. Mast configurations differ. Two masts in *Forrestal*, one in others. In the last two ships, *Kitty Hawk* and *Constellation*, the island is smaller and further aft than the superstructure in the first four, and the lifts are disposed two before the island and one abaft the island on the starboard side, and one on the after quarter on the port side, compared with two abaft the island and one before the island on the starboard side, and one on the forward quarter on the port side in the first four ships.

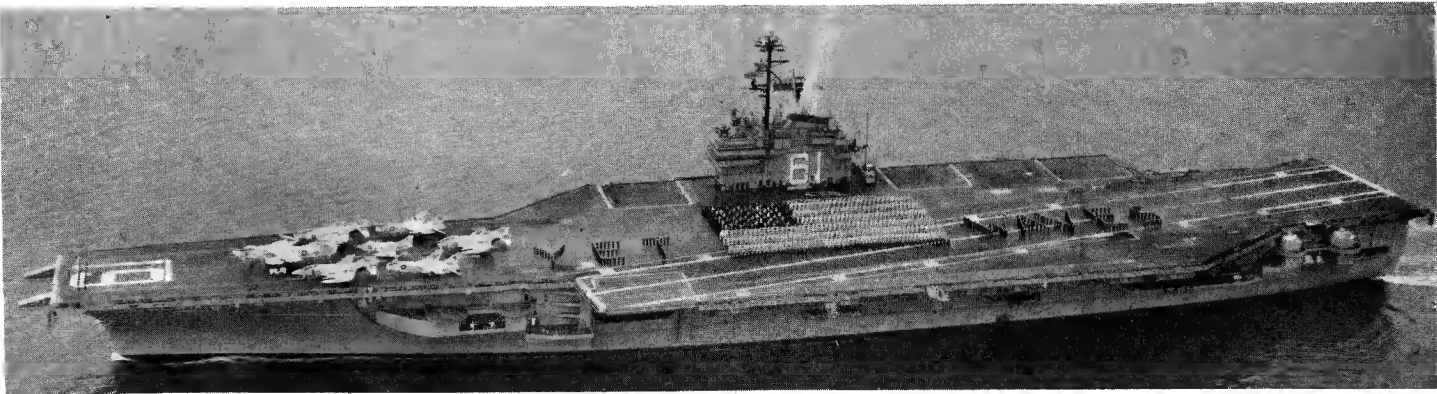
PHOTOGRAPHS. Port bow aerial view of *Independence* in 1959-60 to 1962-63 editions. Port bow oblique aerial view of *Kitty Hawk* in 1961-62 and 1962-63 editions. Starboard bow aerial view of *Forrestal* in 1958-59 to 1963-64 editions. Counter aerial view of *Kitty Hawk* showing mast hinged down in 1961-62 to 1963-64 editions. Port quarter surface view of *Saratoga* in the 1958-59 to 1964-65 editions. Starboard broadside aerial view of *Independence* in the 1959-60 to 1964-65 editions. Starboard bow oblique aerial view of *Kitty Hawk* in the 1963-64 to 1964-65 editions. Starboard bow oblique aerial view of *Ranger* in the 1964-65 edition. Port bow oblique aerial views of *Constellation* and *Ranger* at sea in the 1965-66 and 1966-67 editions.



KITTY HAWK

1965, United States Navy, Official (direct from USS Kitty Hawk, courtesy of Commanding officer)

Attack Aircraft Carriers—continued

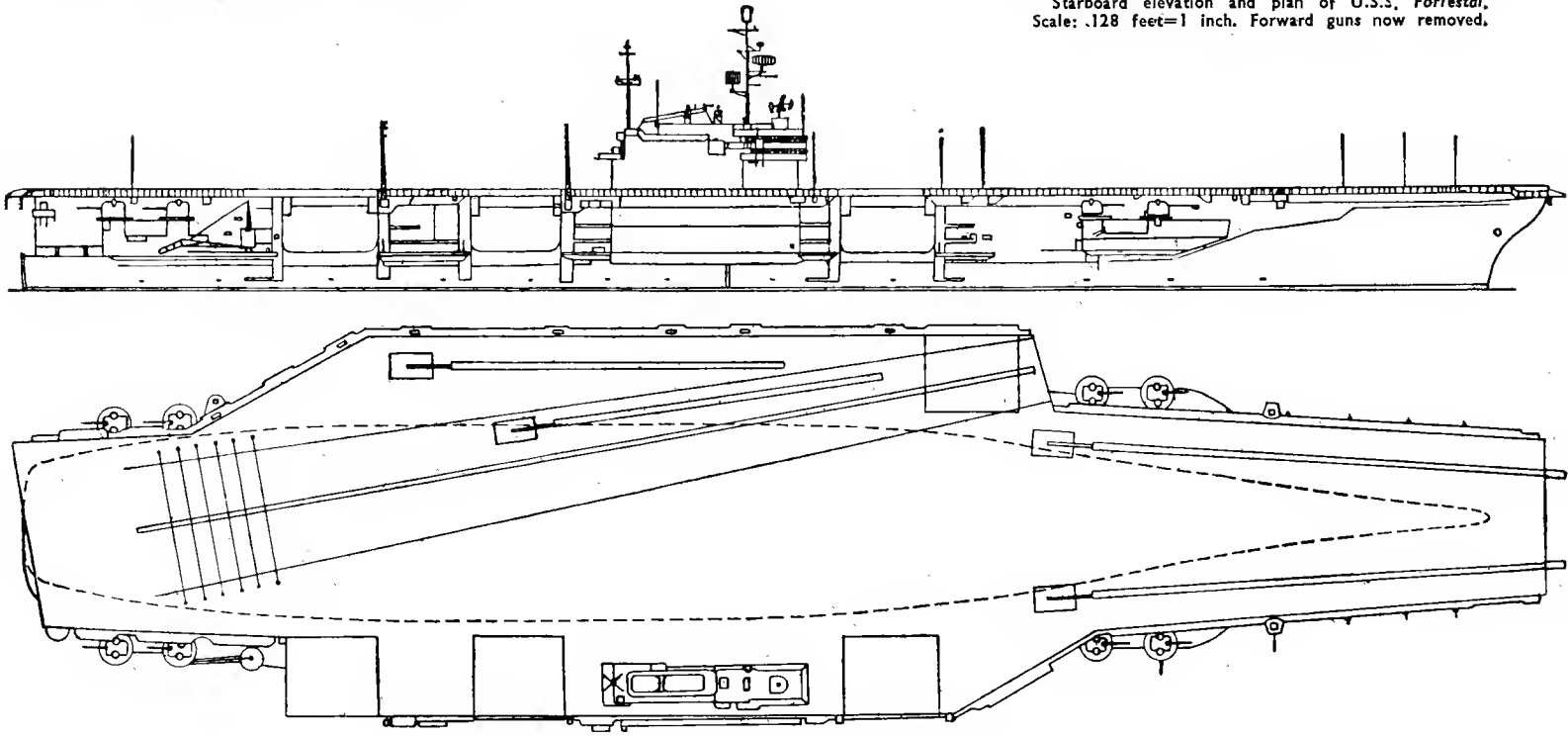


RANGER

1967, United States Navy, Official

"Forrestal" Class—continued

Drawing
Starboard elevation and plan of U.S.S. Forrestal.
Scale: .128 feet=1 inch. Forward guns now removed.



	Name	No.	Builders	Laid down	Launched	Completed
CORAL SEA		CVA 43	Newport News SB & DD Co	10 July 1944	2 Apr 1946	1 Oct 1947
FRANKLIN D. ROOSEVELT (ex-Coral Sea)		CVA 42	New York Navy Yard	1 Dec 1943	29 Apr 1945	27 Oct 1945
MIDWAY		CVA 41	Newport News SB & DD Co	27 Oct 1943	20 Mar 1945	11 Sep 1945

3 "Midway" Class

Displacement, tons	
Coral Sea:	52 500 standard; 63 400 full load
F. D. Roosevelt:	51 000 standard; 62 674 full load
Midway:	51 000 standard; 62 000 full load (see Reconstruction notes)
Length, feet (metres)	900 (274.3) wl; 979 (298.4) oa
Beam, feet (metres)	121 (36.9) hull
Draft, feet (metres)	36 (11.0)
Width, feet (metres)	174 (53.0) flight deck; 222 (67.7) extreme
Flight deck area	3 acres (1.2 hectares)
Catapults	3 steam; 2 forward only in Franklin D. Roosevelt
Aircraft	50 to 80 according to size
Guns, dual purpose	4—5 in (127 mm); 3 only in Coral Sea (see Gunnery notes)
Boilers	12 Babcock & Wilcox
Main engines	Geared turbines GE in Franklin D. Roosevelt Westinghouse in others 212 000 shp; 4 shafts
Speed, knots	33
Complement	2 587 (112 officers, 2 475 men) (excluding air group personnel) Accommodation for 412 officers and 3 550 men

The originally designed standard displacement was 45 000 tons, subsequently increased considerably as a result of conversion and re-construction with angled deck, enclosed bow and other modifications (see Modernisation notes on following page). They were the most extensively welded ships in the United States Navy. Cost \$90 000 000 each to build initially.



FRANKLIN D. ROOSEVELT

1967, United States Navy, Official

Attack Aircraft Carriers—continued

3 "Midway" Class—continued

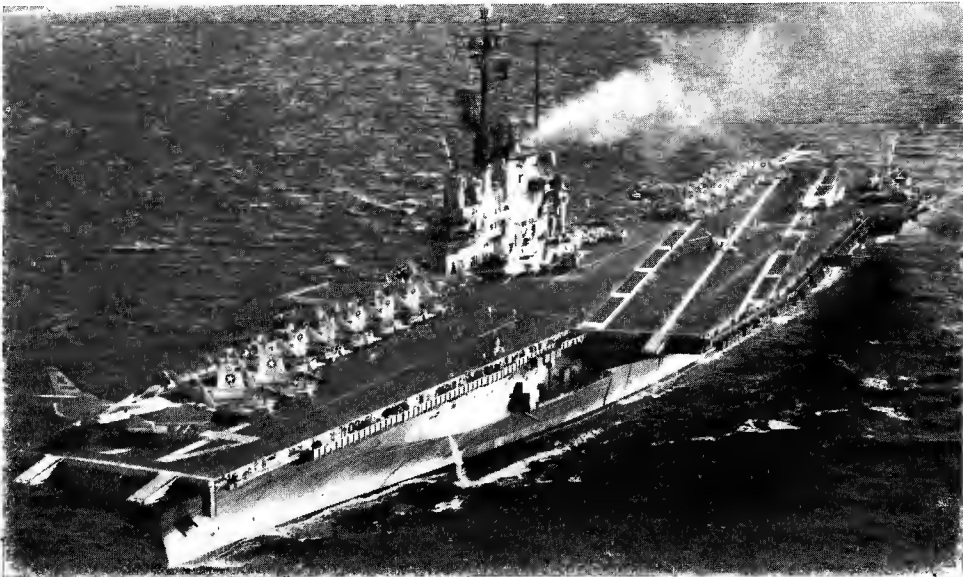
RECONSTRUCTION. On 13 Feb 1966 *Midway* was taken in hand for overhaul at San Francisco Naval Shipyard extending for 30 to 34 months and costing \$75 000 000. Fitted with two improved bow catapults three enlarged and relocated deck-edge elevators, enlarged flight deck, high impact arrester gear, and computerised NT Data System. New dimensions are 927 × 238 feet with a full load displacement of 64 000 tons.

GUNNERY. *Midway* and *Franklin D. Roosevelt* originally mounted eighteen 5 inch guns, subsequently 14 and later only ten, four on the port and six on the starboard side. They also had 3-inch twin gun mountings (now removed) in place of the former 40 mm quadruple gun mountings. Six 5 inch were removed from *Franklin D. Roosevelt* during her 1963 overhaul.

AIRCRAFT COMPLEMENT. These three ships could originally carry 137 aircraft, when aircraft were smaller.

ARMOUR. Protected by heavy armour, intricate water-tight compartments and improved system of damage control. The armoured flight deck is 932 × 113 feet in extent and covered with non-skin surface material: it was strengthened in all three ships in 1947-48, to enable heavier aircraft to be handled.

ELEVATORS. The triangular section on the fore end of forward elevators increases the length of the elevators 12 feet along the centreline. The additional length permits easier handling of larger aircraft. Following first modernisation *Midway* and *Roosevelt* each had two deck-edge elevators and one centreline elevator. *Coral Sea* has three aluminium deck-edge elevators.

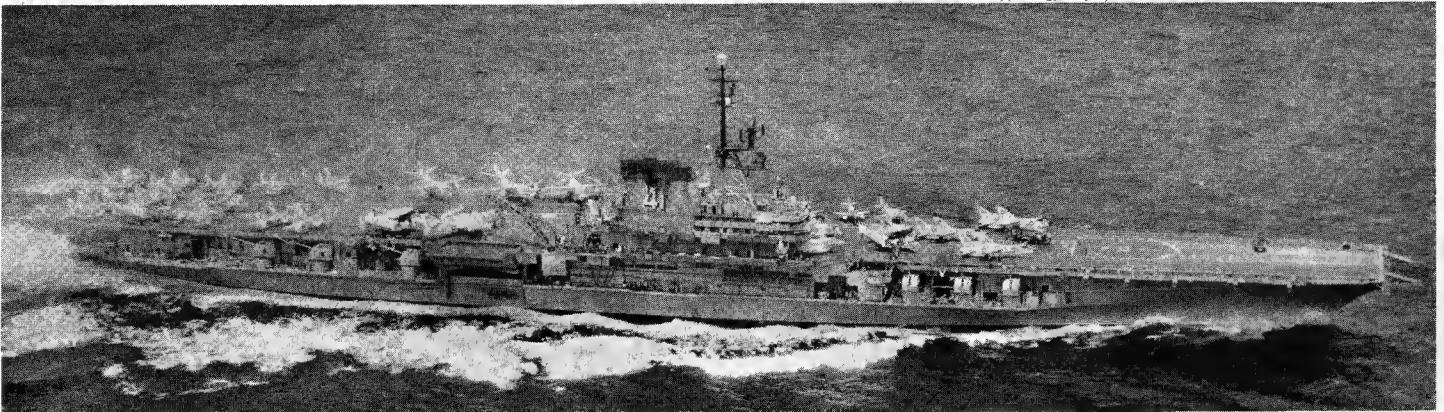
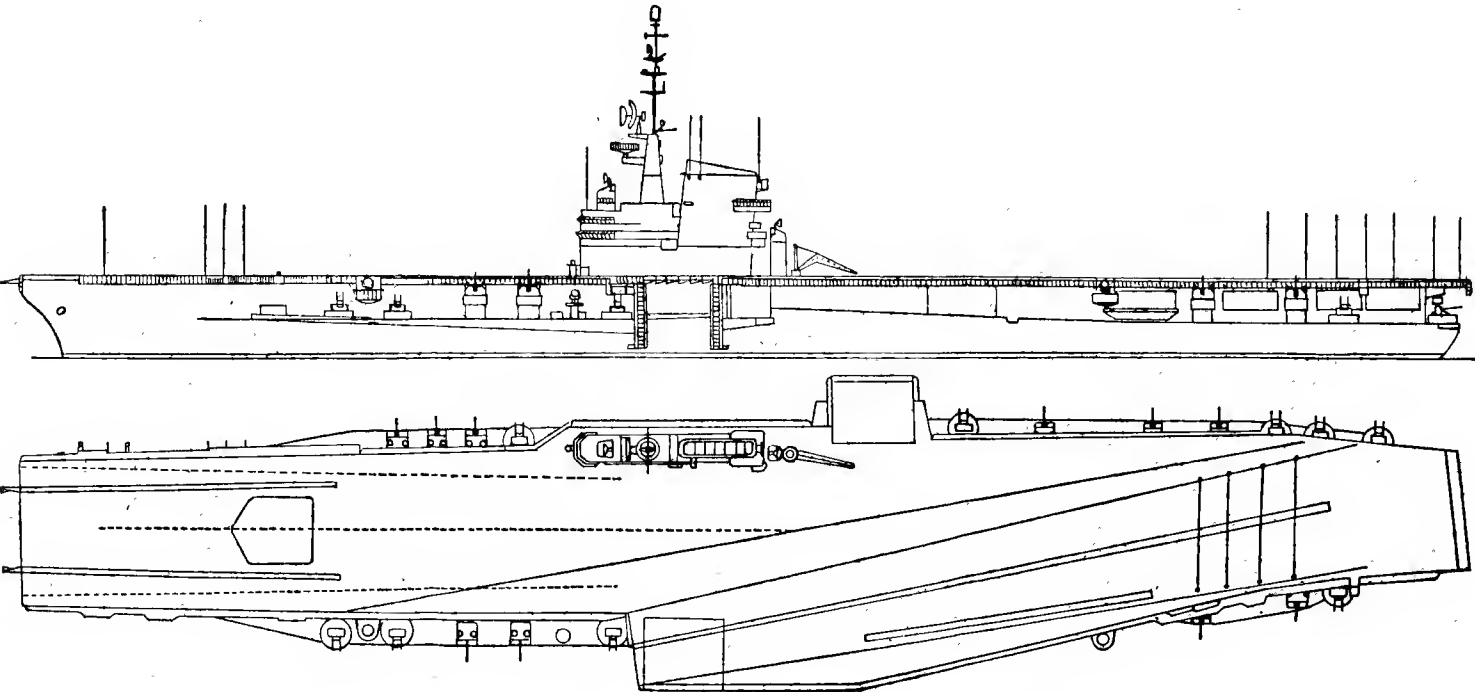


CORAL SEA

1964, United States Navy, Official

DISPOSITION. *Coral Sea* is in the Pacific Fleet, *Franklin D. Roosevelt* is in the Atlantic Fleet. *Midway* is undergoing reconstruction.

DRAWING. Port elevation and plan. Scale; 128 feet = 1 inch. Represents *Franklin D. Roosevelt*. See *Gunnery* above, and *Modernisation and Appearance*, next page.



MIDWAY

1965, United States Navy, Official

Attack Aircraft Carriers—continued

3 "Midway" Class—continued

APPEARANCE. *Coral Sea* and *Franklin D. Roosevelt* have truncated conical stanchion and pole mast. *Midway* had lattice mast. *Coral Sea* differed in her gun layout from the other two. See *Gunnery* notes on previous page.

PHOTOGRAPHS. Port bow view of *Midway* before conversion, and port near broadside view of *Coral Sea* before conversion, in the 1957-58 edition. Starboard quarter aerial view of *Midway* in the 1958-59 and 1959-60 editions, starboard quarter surface view of *Franklin D. Roosevelt* in the 1959-60 edition and counter view of *Franklin D. Roosevelt*, showing flight deck transom and sponsons, on page 476 (Addenda) of the 1959-60 edition. Bow aerial view of *Coral Sea* in the 1960-61 to 1963-64 editions, and port quarter oblique aerial view in the 1961-62 to 1963-64 editions. Port bow oblique aerial view of *Midway* in the 1959-60 to 1964-65 editions and of *Franklin D. Roosevelt* in the 1958-59 to 1966-67 editions.

5 "Oriskany" Type
(Improved "Essex" Class)

Doqueria
Angulacio 10 *SQS 23*

Displacement, tons	33 100 standard; ✓ 40 800 to 42 600 full load
Length, feet (metres)	786 0 (239 6) pp; 840 (256 0) wl; 898 8 (274 0) oa; except CVA 34: 904 (275 5) oa CVA 31 and 38: 889 (271 0) oa
Beam, feet (metres)	CVA 34: 106 5 (32 5) others: 101-103 (30 8-31 4)
Width, feet (metres)	129 (34 4) over sponsons; 192 (58 5) overall; except CVA 34: 195 2 (59 5) extreme
Draft, feet (metres)	31 (9 4) max
Hangar length, feet (metres)	720 (219 5)
Hangar width, feet (metres)	93 (28 3) max
Catapults	2 steam (see <i>Conversion</i> notes)
Aircraft	60 to 70 (according to size)
Guns, dual purpose	4 to 8—5 in (127 mm) 38 cal. 7—5 in (127 mm) in <i>Ticonderoga</i> (see <i>Gunnery</i> note)
Armour	Sides and deck 3 in (76 mm)
Boilers	8 Babcock & Wilcox
Main engines	Geared turbines 150 000 shp; 4 shafts
Speed, knots	33✓
Complement	1 990 (100 officers, 1 890 men) (excluding air group personnel) Accommodation for 340 officers, 2 950 men

Oriskany was the first of a new type to which modified "Essex" class carriers subsequently conformed; her construction was delayed and she was completed to a modified design with an improved island, heavier decks and handling gear to operate bigger aircraft, larger lifts, more powerful catapults, a stronger runway and increased stowage for petrol as compared with the "Essex" class. Bulges offset the extra weight thus added. *Hancock* completed catapult conversion Jan 1954; first to have new steam catapults and starboard deck-edge elevator; first of 27c conversions, has one-foot wider blister than 27a conversions. Catapult conversion completed in *Ticonderoga* Apr 1954. Angled deck and enclosed bow conversion completed in *Oriskany* 31 Mar 1959. Angled deck, steam catapult and enclosed bow conversion completed in *Shangri-La* 1 Feb 1955, *Bon Homme Richard* 1 Nov 1955, *Hancock* 15 Nov 1956, *Ticonderoga* 1 Apr 1957, *Shangri-La* has mirror sight landing aid system.

MODERNISATION. *Franklin D. Roosevelt* was modernised at Puget Sound Naval Shipyard under the 1954 conversion programme, with angled deck, enclosed bow, three higher capacity catapults (steam), increased aviation fuel capacity, and broader hull, enabling her to handle faster and heavier jet aircraft. Conversion was completed on 6 Apr 1956 and cost \$48 000 000, 53 per cent of ships' original cost. During the 1963 overhaul of *Franklin D. Roosevelt* the angled deck catapult was removed and two forward catapults rebuilt. Modernisation and conversion of *Midway*, including installation of the angled deck, as authorised in the 1954 Fiscal Year commenced in Autumn 1955 at Puget Sound Naval Shipyard and was completed on 30 Sep 1957 when she was recommissioned for duty with the Pacific Fleet. Early in 1966 *Midway* was taken in hand for further modernisation. Modernisation and conversion of *Coral Sea* was authorised in the Fiscal Year 1957. Conversion at Puget Sound Naval Shipyard commenced in Apr 1957. The forward

centreline elevator was replaced by a deck edge elevator on the starboard side forward, while the port side elevator originally installed was moved aft. Arresting gear and barricades were relocated, and extensive changes made in the hangar bay area. The beam at the waterline was increased by approximately 8 feet. This ship was designed during the Second World War on the basis of experience with the "Essex" class, but was completed too late to see service. This was the first major conversion she underwent, and comprised complete modernisation, including angled deck, hurricane bow and replacement of two hydraulic catapults by three steam catapults. She was recommissioned on 25 Jan 1960.

CLASSIFICATION. All originally designed as CVB's but reclassified as Attack Aircraft Carriers, CVA in Oct 1952.

CLASS. Three more ships of this class projected were cancelled, CVB 44 in 1943 and CVB 56 and 57 in 1945.

Name	No.	Builders	Laid down	Launched	Completed
BON HOMME RICHARD	CVA 31	New York Navy Y	1 Feb 1943	29 Apr 1944	26 Nov 1944
HANCOCK (ex-Ticonderoga)	CVA 19	Bethlehem Steel Co	26 Jan 1943	24 Jan 1944	15 Apr 1944
ORISKANY	CVA 34	New York Navy Y	1 May 1944	13 Oct 1945	25 Sep 1950
SHANGRI-LA	CVA 38	Norfolk Navy Yard	15 Jan 1943	24 Feb 1944	15 Sep 1944
TICONDEROGA (ex-Hancock)	CVA 14	Newport News SB	1 Feb 1943	7 Feb 1944	10 Oct 1944



HANCOCK

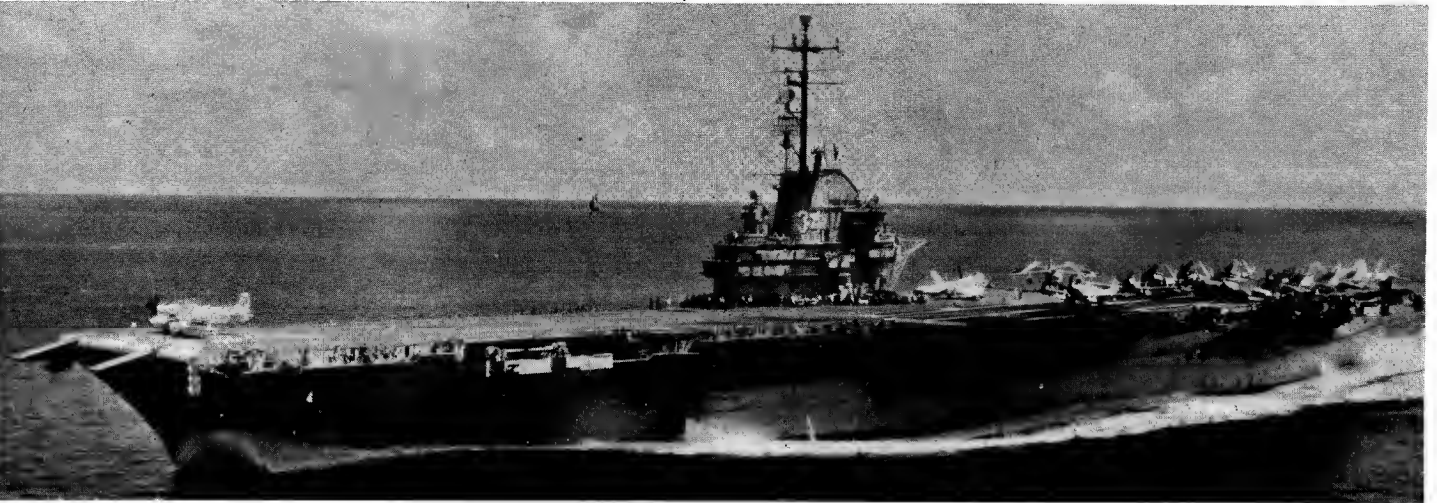
Added 1965, United States Navy, Official

PHOTOGRAPHS. A port bow view of *Bon Homme Richard* appears in the 1958-59 to 1961-62 editions, a starboard bow oblique aerial view of *Bon Homme Richard* in the 1963-64 and 1964-65 editions, and a port view of *Oriskany* in the 1962-63 to 1966-67 editions.

GUNNERY. One 5-inch mount was removed from *Ticonderoga* during her 1962 overhaul.

CONVERSION. *Oriskany* underwent extensive conversion and modernisation amounting to reconstruction at

San Francisco including the following improvements: Angled deck; Enclosed bow; Arresting gear able to handle larger and heavier aircraft; Two high capacity steam catapults; Increased aircraft elevator capacity and size; Modern special weapon spaces; Air-to-air missile stowage and facilities; Increased aviation fuel stowage for jet fuel. Flight deck, 876 feet long, of increased strength to permit landing A3D type aircraft. One third of the deck is of aluminium planking. She was the last of the Second World War built aircraft carriers to receive the angled deck, enclosed bow, and steam catapults. She recommissioned on 7 Mar 1959.



ORISKANY

Added 1967, United States Navy, Official

Aircraft Carriers—continued

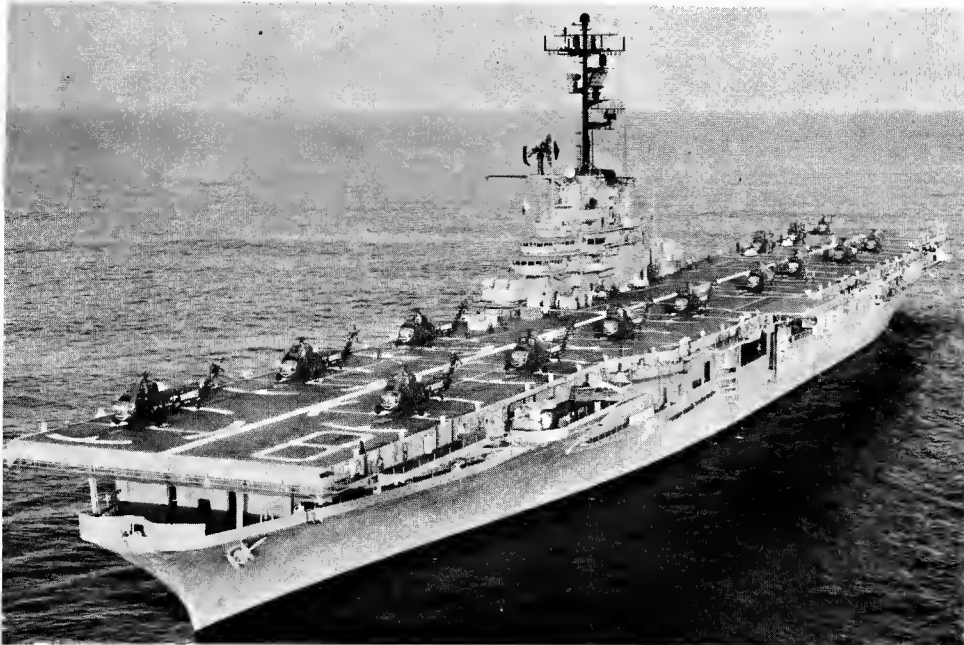
Name	No.	Builders	Laid down	Launched	Completed
ESSEX	CVS 9	Newport News SB Co	28 Apr 1941	31 July 1942	31 Dec 1942
YORKTOWN (ex-Bon Homme Richard)	CVS 10	Newport News SB Co	1 Dec 1941	21 Jan 1943	15 May 1943
INTREPID	CVS 11	Newport News SB Co	1 Dec 1941	26 Apr 1943	16 Aug 1943
HORNET (ex-Kearsarge)	CVS 12	Newport News S8 Co	3 Aug 1942	29 Aug 1943	29 Nov 1943
RANDOLPH	CVS 15	Newport News S8 Co	10 May 1943	28 June 1944	9 Oct 1944
LEXINGTON (ex-Cabot)	CVS 16	Bethlehem Co Quincy	15 July 1941	26 Sep 1942	17 Mar 1943
WASP (ex-Oriskany)	CVS 18	Bethlehem Co Quincy	18 Mar 1942	17 Aug 1943	24 Nov 1943
BENNINGTON	CVS 20	New York Navy Yard	15 Dec 1942	26 Feb 1944	6 Aug 1944
BOXER	LPH 4 (ex-CVS 21)	Newport News SB Co	13 Sep 1943	14 Dec 1944	16 Apr 1945
LEYTE (ex-Crown Point)	AVT 10 (ex-CVS 32)	Newport News S8 Co	21 Feb 1944	23 Aug 1945	11 Apr 1946
KEARSARGE	CVS 33	New York Navy Yard	1 Mar 1944	5 May 1945	2 Mar 1946
ANTIETAM	CVS 36	Philadelphia Navy Yard	15 Mar 1943	20 Aug 1944	28 Jan 1945
PRINCETON	LPH 5 (ex-CVS 37)	Philadelphia Navy Yard	14 Sep 1943	8 July 1945	18 Nov 1945
LAKE CHAMPLAIN	CVS 39	Norfolk Navy Yard	15 Mar 1943	2 Nov 1944	3 June 1945
TARAWA	AVT 12 (ex-CVS 40)	Norfolk Navy Yard	1 Mar 1944	12 May 1945	8 Dec 1945
VALLEY FORGE	LPH 8 (ex-CVS 45)	Philadelphia Navy Yard	7 Sep 1944	18 Nov 1945	3 Nov 1946
PHILIPPINE SEA (ex-Wright)	AVT 11 (ex-CVS 47)	Bethlehem Co Quincy	19 Aug 1944	5 Sep 1945	11 May 1946

CVS = ASW Support Aircraft Carrier LPH = Amphibious Assault Ship AVT = Auxiliary Aircraft Transport

17 "Essex" Class

Displacement, tons	30 800 to 33 000 standard; 38 500 full load
Length, feet (metres)	786 (239.6) pp; 840 (256.0) wl; 888 (270.7) oa; except— CVS 9, 11: 898 (273.7) oa CVS 12, 18, 39: 899 (274.0) oa CVS 16, 20: 889 (271.0) oa AVT 12, LPH 8: 889 (271.0) oa Flight deck: 876 (267.0) oa
Beam, feet (metres)	93 (28.3) except— CVS 11: 103 (31.4) CVS 12, 18, 39: 101 (30.8)
Draft, feet (metres)	31 (9.4) max
Width, feet (metres)	113 (34.4) over sponsons 136 (41.5) extreme, except— CVS 11: 192 (58.5) max CVS 18, 36: 154 (46.9) including angled deck
Hangar, Length, feet (metres)	720 (219.5)
Width, feet (metres)	93 (28.3) max
Aircraft	CVS carry 28 aircraft, 12 helicopt- ers, LPH carry about 30 helicopters
Guns, dual purpose	All CVS: 4 to 8 —5 in (127 mm) 38 cal. LPH 4: 8—5 in (127 mm) 38 cal. LPH 5, 8: 6—5 in (127 mm) 38 cal. All AVT: 12—5 in (127 mm) 38 cal. (see Gunnery notes)
Armour	Side amidships 3 in—2 in (76—51 mm); hangar deck 3 in (76 mm); flight and upper decks 1.5 in (38 mm)
Boilers	8 Babcock & Wilcox
Main engines	Geared turbines 150 000 shp; 4 shafts
Speed, knots	33
Complement	CVS: 1 517 (87 officers, 1 430 men, excluding air group)
Accommodation	340 officers, 2 890 men

The first ship of this class was ordered in 1940. The designed displacement was 27 100 tons. The original capacity, with smaller aircraft, was 85 to 100, and 107 were carried by close stowage. Essex was built in 20 months, Yorktown in 17.5 months. Later ships of this class were of improved design, with stronger flight decks, and more thoroughly sub-divided. CVSs underwent conversion for anti-submarine warfare. LPHs were



VALLEY FORGE

1967, United States Navy, Official

adapted to carry 30 helicopters and a Marine detachment of 10 officers and 323 men, with accommodation for 1,650 troops, but no structural alterations were made. They could still handle fixed wing aircraft if necessary. Lexington has been the permanent training carrier at Pensacola since Dec 1962.

ENGINEERING. In Nov 1945, Lake Champlain made Atlantic crossing from Gibraltar to Newport News in 4 days, 9 hours, an average speed of 32 knots. Philippine Sea made Pacific crossing from Yokohama to San Francisco in 7 days, 13 hours, an average of 25.2 knots.

SONAR. Randolph was fitted with sonar, first of its type in any aircraft carrier. Other CVSs are also so fitted.

MARINE COMPLEMENTS. In addition to their ship's companies of 1 000 officers and men Boxer, Princeton and Valley Forge are capable of carrying a Marine Battalion Landing Team of 1 200 to 1 500 officers and men, plus the crews of 30 to 40 helicopters.

DRAWING. A starboard elevation and plan drawing of the improved "Essex" class before conversion to angled deck and enclosed bow, scale 128 feet = 1 inch, appears in the 1964-65 and earlier editions.



YORKTOWN

1965, United States Navy, Official

Aircraft Carriers—continued



BOXER

1965, United States Navy, Official

17 "Essex" Class—continued

GUNNERY. The number of 5-inch guns varies. *Randolph* has 8—5 inch and *Essex* 4—5 inch. *Yorktown* has no 5 inch guns on the starboard side aft. The LPHs are the only ships of this type retaining 5 inch guns on the flight deck (see photograph of *Boxer* above). The 3 inch guns have been removed to further reduce topside weight.

CONVERSION. The FRAM II conversion which *Randolph* underwent at Norfolk Naval Shipyard included closed circuit television for briefing pilots and a modern combat information centre for anti-submarine warfare missions.

Kearsarge was equipped with all aluminium surface to flight deck and aluminium elevators, and was the first aircraft carrier to be so fitted.

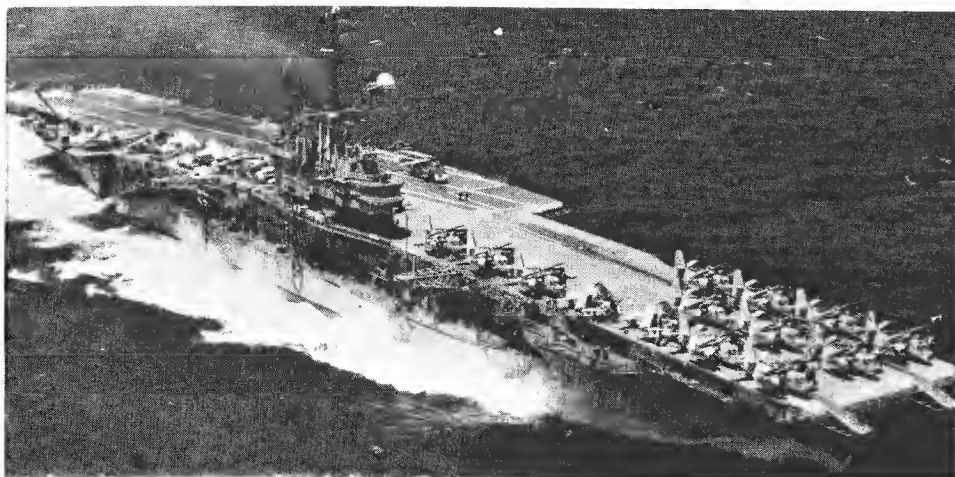
Kearsarge underwent FRAM II conversion in 1961-62 and *Bennington* and *Valley Forge* in 1963. *Boxer* and *Princeton* also completed a 7-month FRAM II conversion. *Essex* underwent a 6-month modernisation including the installation of sonar.

Wasp was the first modernised carrier to get CVS status. *Antietam* has an earlier version of the angled deck, the first experimental angled deck installation.

The island superstructure of *Philippine Sea* was modified, funnel and mast being united, with twin clinker screen on the funnel, *Princeton* and *Leyte* were similarly modified.

Antietam, *Boxer*, *Bunker Hill*, *Lake Champlain*, *Leyte*, *Philippine Sea*, *Princeton*, *Tarawa* and *Valley Forge* never received major modernisation. All except *Antietam* have their original axial decks. *Lake Champlain* received an up-dating refit but neither angled deck nor hurricane bow. All the other nine CVSs were extensively modernised. *Intrepid* completed catapult conversion in Apr 1954. Angled deck and enclosed bow conversion completed in *Bennington* on 1 Apr 1955. *Essex* on 9 Mar 1956. *Hornet* on 15 Aug 1956. *Kearsarge* on 31 Jan 1957. *Randolph* on 12 Feb 1956. *Wasp* on 1 Dec 1955, and *Yorktown* on 14 Oct 1955. Angled deck, steam catapult and enclosed bow conversion completed in *Lexington* on 1 Sep 1955 and *Intrepid* on 2 May 1957. Most of the 17 ships still have hydraulic catapults. *Bunker Hill* was towed to San Francisco in 1965 for \$1 250 000 reconditioning, after 18 years in the reserve fleet. Flight deck repaired and 12,000 volt shore electrical system installed. In Sep 1965 she was towed to San Diego to become experimental ship for Navy Electronics Laboratory in Project Southern Cross (Naval Ships Advanced Communication System), an integrated and coherent system for all electronic gear that a fighting ship needs for modern warfare, and to provide simulated at-sea conditions for tests on newly designed electronics equipment. She was moored for the entire test period and propulsion equipment was not activated. She was stricken from the Navy List on 1 Nov 1966 and will be scrapped when use as a floating laboratory is completed.

RECLASSIFICATION. All the above ships originally designated CV, were redesignated CVA (Attack Aircraft Carriers) in Oct 1952, but *Antietam*, *Bunker Hill* and *Leyte* were again redesignated from CVA to CVS (ASW Support Aircraft Carriers) in July 1953; *Princeton* and *Valley Forge* in Jan 1954; *Tarawa* on 10 Jan 1955; *Philippine Sea* on 5 Nov 1955; *Boxer* on 1 Feb 1956; *Wasp* on 1 Nov 1956; *Lake Champlain* on 1 Aug 1957; *Yorktown* on 1 Sep 1957; *Hornet* on 27 June 1958; *Kearsarge* on 1 Oct 1958; *Randolph* on 31 Mar 1959; *Bennington* on 30 June 1959; *Essex* on 8 Mar 1960; *Intrepid* on 31 Mar 1962; and *Lexington* on 1 Oct 1962. *Boxer* and *Princeton* were reclassified as LPH on 30 Jan 1959 and 2 Mar 1959, respectively and *Valley Forge* on 3 June 1961. *Bunker Hill*, *Leyte* and *Philippine Sea* were reclassified as AVT on 15 May 1959 and *Tarawa* in 1961.



INTREPID

1966, Official (direct from USS *Intrepid*, courtesy Commanding Officer)

LEXINGTON

1965, United States Navy, Official

ANGLED DECK. The flight deck of *Antietam* angles 8 degrees, 9 minutes to port with arresting gear orientated to the centre line of her angled deck. The angled deck, which although a British invention, was first installed in *Antietam* (in Oct-Dec 1962) has since been incorporated into the design of all new aircraft carriers.

SPONSONS. The stern of *Bennington* and other carriers is smoothed off and streamlined after removal of the 3-inch gun housing and overhanging sponsons.

PHOTOGRAPHS. Port broadside aerial view of *Randolph* in the 1957-58 edition. Port quarter overhead view of *Randolph* showing angled deck and aircraft, and port bow oblique aerial view of *Kearsarge* in the 1958-59 and 1959-60 editions. Large starboard broadside view of *Randolph* firing a Regulus guided missile, and starboard bow surface view of *Tarawa* in the 1957-58 to 1959-

60 editions. Port bow overhead view of *Antietam* and starboard broadside surface view of *Wasp* in the 1953-54 to 1959-60 editions. Aerial broadside view of *Philippine Sea* with six helicopters flying in formation in the 1957-58 to 1961-62 editions. Port bow oblique aerial view of *Bennington*, showing hurricane bow and angled deck in the 1961-62 to 1963-64 editions. Port quarter oblique aerial view of *Yorktown* and port bow oblique aerial view of *Essex* in the 1959-60 to 1964-65 editions. Port bow oblique aerial view of *Valley Forge* showing helicopters ranged on deck in the 1962-63 to 1965-66 editions. Port bow oblique aerial view of *Wasp* in the 1964-65 to 1966-67 editions.

DISPOSALS

Franklin, AVT 8 (ex-CVS 13) was officially stricken from the List of US Naval Vessels on 1 Oct 1964, and *Bunker Hill*, AVT 9 (ex-CVS 17) on 1 Nov 1966.

HELICOPTER CARRIERS (LPH), (LHA)

Planned General Purpose Type (LHA)

Displacement, tons 42000
Length, feet 800 approx

Six to ten large general purpose helicopter assault carriers are planned under a six to ten year programme. This multi-role amphibious type will be a combination of LPH and LSD. Proposed: 1 approved in FY 1968, 3 in FY 1969 programmes. First contract award envisaged in 1968 and first ship delivered in 1972.

Name	No.	Builders	Laid down	Launched	Completed
IWO JIMA	LPH 2	Puget Sound Naval Shipyard	13 Feb 1959	17 Sep 1960	26 Aug 1961
OKINAWA	LPH 3	Philadelphia Naval Shipyard	1 Apr 1960	19 Aug 1961	14 Apr 1962
GUADALCANAL	LPH 7	Philadelphia Naval Shipyard	1 Sep 1961	16 Mar 1963	20 July 1963
GUAM	LPH 9	Philadelphia Naval Shipyard	15 Nov 1962	22 Aug 1964	16 Jan 1965
TRIPOLI	LPH 10	Ingalls Shipbuilding Corp	15 June 1964	31 July 1965	6 Aug 1966
NEW ORLEANS	LPH 11	Philadelphia Naval Shipyard	1 Mar 1966	To be 1967	To be 1968
	LPH 12	Ingalls Shipbuilding Corp	To be 1968	To be 1969	To be 1970

7 Amphibious Assault Type (LPH)

Displacement, tons 10 700 light; 17 000 standard; 18 340 full load
Length, feet (metres) 592 (180.4) wl; 602 (183.5) oa
Beam, feet (metres) 84 (25.6) hull
Draft, feet (metres) 26 (7.9)
Width, feet (metres) 105 (32.0) max
Aircraft 24 medium; 4 heavy, 4 observation helicopters (1 Marine Squadron)
Guns, dual purpose 8—3 in (76 mm) 4 twin
Boilers LPH 2, 3, 7: 2 Combustion Engineering; LPH 9: 2 Babcock & Wilcox
Main engines Geared turbines
Speed, knots 23 000 shp; 1 shaft
Complement 20
528 crew (48 officers, 480 men) plus accommodation for 2 090 troops (190 officers and 1 900 men)

Helicopter carriers designed as amphibious assault ships to support the Marine Corps vertical envelopment concept. They correspond to commando carriers in the Royal Navy. Each carries an assault force of personnel, combat supplies, equipment and transport helicopters. Can carry one Marine battalion landing team. They have command facilities, cargo and material handling equipment and adequate space for embarked troops and vehicles. The flight and hangar deck provide for helicopter operations and maintenance. Two deck-edge elevators. *Iwo Jima* was the first amphibious assault ship to be built from the keel up for helicopter use. She cost \$40 000 000.



TRIPOLI

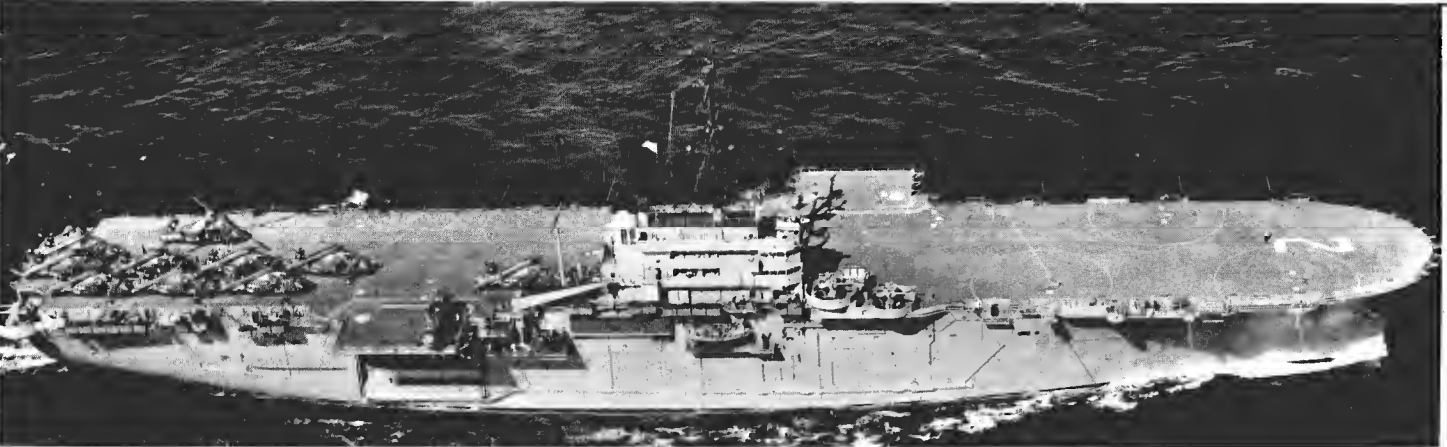
1967

CONSTRUCTION. *Iwo Jima* was built under the Fiscal Year 1958 Programme. *Okinawa* 1959 programme, *Guadalcanal* 1960 programme. *Guam* 1962 programme. *Tripoli* 1963 programme. *New Orleans* 1965 programme, and LPH 12 1966 programme.

64 to 1966-67 editions, and a starboard surface view of *Guadalcanal* in the 1965-66 and 1966-67 editions.

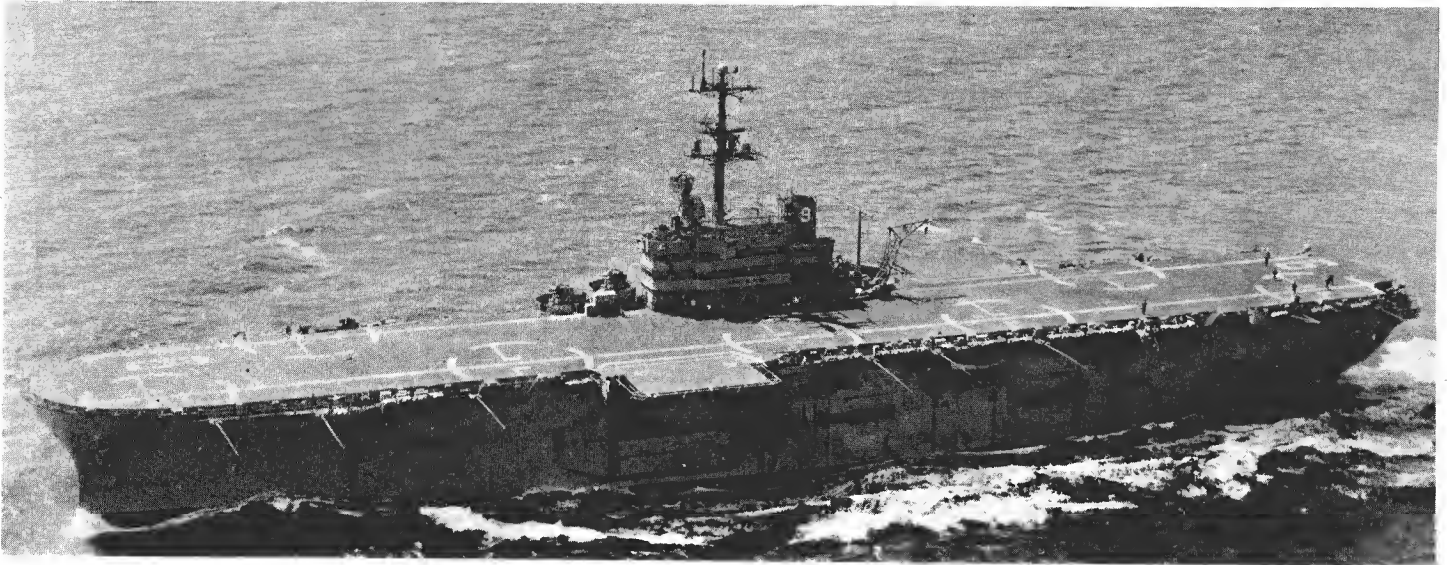
NOMENCLATURE. These ships are named after battles or operations in which Marine Corps forces made history.

CLASS. *Iwo Jima*, *Okinawa* and *Guadalcanal* are the prototype class. *Guam* and *Tripoli* are a modified class.



IWO JIMA

1966, United States Navy, Official



GUAM

1967, United States Navy, Official

Ex-AIRCRAFT CARRIERS

Name	No.	Builders	Laid down	Launched	Completed
MONTEREY (ex-Dayton)	AVT 2 (ex-CVL 26)	New York S8 Corpn	29 Dec 1941	28 Feb 1943	17 June 1943
SAN JACINTO (ex-Reprisal, ex-Newark)	AVT 5 (ex-CVL 30)	New York S8 Corpn	26 Oct 1942	26 Sep 1943	15 Dec 1943

Aircraft Transports (AVT)
Former Aircraft Carriers (CVL)
2 "Cabot" Class

Displacement, tons	11 000 standard; 15 800 full load
Length, feet (metres)	600 (182.9) wl; 623 (189.9) oa
Beam, feet (metres)	71.5 (21.8) hull
Draft, feet (metres)	26 (7.9)
Width, feet (metres)	109 (33.2) extreme
Aircraft	Originally carried over 40
Guns, AA	28-40 mm latterly mounted
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	100 000 shp; 4 shafts
Speed, knots	32
Complement	see General notes

Completed as aircraft carriers after having been laid down as cruisers of the "Cleveland" class.

As aircraft carriers the original complement was 1 109 (159 officers and 950 men) to 1 183 (peace scheme), 1 400 (war scheme). *Princeton* (ex-Tallahassee) CVL 23, of this class, was lost in action in 1944.

GUNNERY. Originally designed to include 4-5 inch guns in armament, but subsequently mounted 16-40 mm AA guns and 40-20 mm AA guns.

TRANSFERS. *Langley* was transferred to the French Navy in 1951 under the Mutual Defense Assistance Programme but was returned to the USA in Mar 1963, stricken from the Navy List in June 1963, and later scrapped. *Belleau Wood* (CVL 24), transferred to France in Sep 1953 on loan for five years, subsequently extended for five more, was returned to the USA in Sep 1960 and stricken. *Cabot* was reactivated and modernised at Philadelphia Naval Shipyard, for completion by May 1967, and transfer to Spain as a helicopter carrier.

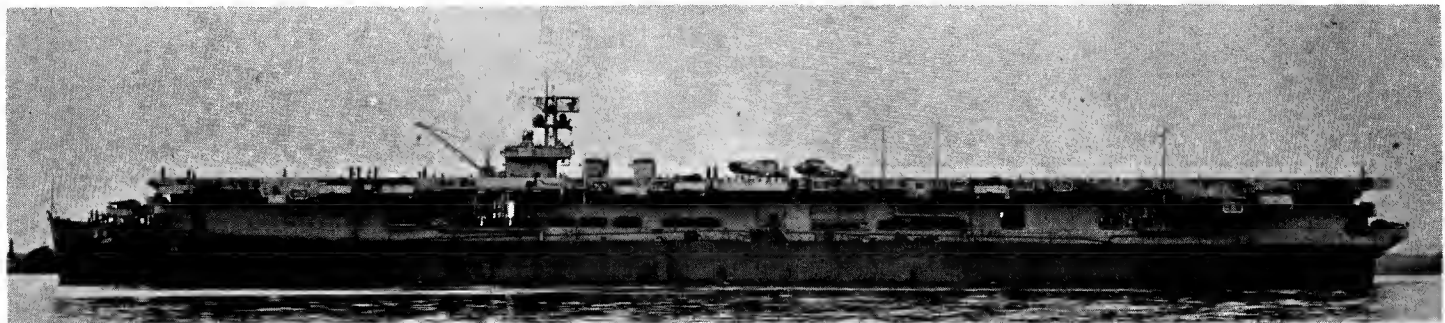
FUNNELS. *Monterey* has only two of her original four funnels.

RECLASSIFICATION. The ships of this class were reclassified from aircraft carriers (CVL) to auxiliary aircraft transports (AVT) on 15 May 1959.

DRAWING. A port elevation and plan, scale 128 feet = 1 inch, appears in the 1959-60 and earlier editions.

PHOTOGRAPHS. A port bow aerial photograph of *Monterey* appears in the 1957-58 edition, and a port broadside view of *Cabot* in the 1957-58 to 1965-66 editions.

DISPOSALS. *Bataan*, AVT 4, was stricken from the Navy list on 1 Sep 1959 and *Cowpens*, AVT 1, on 1 Nov 1959. *Independence* CVL 22, was expended in atom bomb and radiographical experiments from 1946 to 30 Jan 1951.



MONTEREY

United States Navy, Official

Aircraft Ferries (AKV)
Former Escort Aircraft Carriers (CVE)
4 "Bogue" Class

Displacement, tons	9 800 standard; 15 700 full load
Length, feet (metres)	465 (141.7) pp; 496 (151.2) oa
Beam, feet (metres)	69.5 (21.2) hull
Draft, feet (metres)	26 (7.9)
Width, feet (metres)	112 (34.1) extreme
Flight deck, feet (metres)	450 (137.2)
Aircraft	See General notes
Guns	See Gunnery notes
Boilers	2 Foster Wheeler type
Main engines	Westinghouse geared turbines
	8 500 shp;
Complement	75 (see General notes)

Name	No.
CARD	T-AKV 40 (ex-CVU 11, ex-CVHE 11)
CORE	T-AKV 41 (ex-CVU 13, ex-CVHE 13)
BRETON	T-AKV 42 (ex-CVU 23, ex-CVHE 23)
CROATAN	T-AKV 43 (ex-CVU 25, ex-CVHE 25)

Laid down	Launched	Completed
27 Oct 1941	21 Feb 1942	8 Nov 1942
2 Jan 1942	15 May 1942	10 Dec 1942
25 Feb 1942	27 June 1942	12 Apr 1943
15 Apr 1942	3 Aug 1942	28 Apr 1943

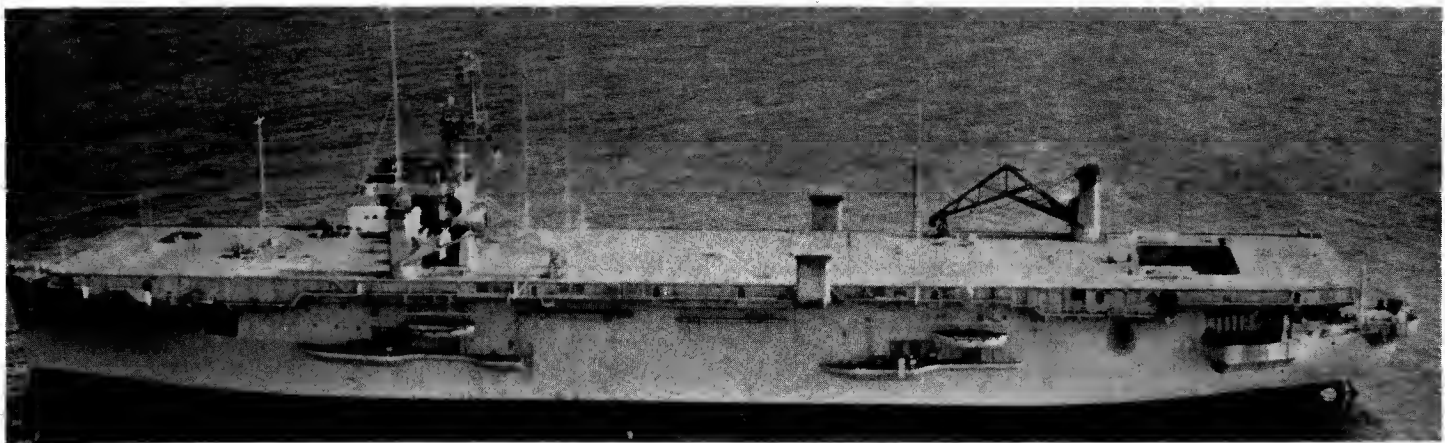
All converted from mercantile hulls built by Seattle-Tacoma Shipbuilding Corpn. Vary slightly in appearance. As escort carriers they carried 30 aircraft and had a complement of 800 officers and men. Named after sounds. Equipped with derricks for retrieving seaplanes and loading and unloading aircraft at the pier side.

RECLASSIFICATION. Reclassified from Escort Aircraft Carriers (CVE) to Escort Helicopter Aircraft Carriers (CVHE) on 12 June 1955, to CVU on allocation as MSTs aircraft ferries on 1 July 1958 and to AKV on 7 May 1959.

PHOTOGRAPHS. A photograph of *Breton* appears in the 1964-65 to 1966-67 editions.

GUNNERY. Unarmed while designated USNS with civil crews. Formerly mounted one or two 5-inch guns, 16-40 mm AA guns, and 20-20 mm AA guns.

DISPOSALS. Sister ships *Altamaha* CVHE 18, *Barnes*, CVHE 20, *Bogue*, CVHE 9, *Copahee*, CVHE 12, and *Nassau*, CVHE 16 also half-sister *Prince William*, CVHE 31, were stricken from the list in 1 Mar 1959 when *Chenango*, CVHE 28, *Santee*, CVHE 29, and *Suwannee*, CVHE 27, of the "Suwannee" class, were also stricken. The sole survivor of the 50 former escort aircraft carriers of the "Anzio" class, *Thetis Bay* LPH6, ex-CVHA 1, ex-CVE 90, was sold for scrap in 1967.



CROATAN

1967

BATTLESHIPS
The battleships *IOWA*, 88 61, *MISSOURI*, 88 63, *NEW JERSEY*, 88 62, (see *Addenda*) and *WISCONSIN*, 88 64 of the "Iowa" class were all decommissioned in 1955-58 and have been laid up ever since. (See full particulars, photographs and drawings in the 1961-62 edition).
DISPOSALS
The battleships *Alabama*, BB 60, *Indiana*, BB 58, *Massachusetts*, BB 59, of the "Indiana" Class, and

South Dakota, 88 57, were all stricken from the List of Naval Vessels on 1 June 1962. (*South Dakota* was sold for scrap in 1964).
The battleships *North Carolina*, BB 55, and *Washington*, BB 56, of the "North Carolina" class were stricken from the List of Naval Vessels at the end of 1960.
The battle cruisers *Alaska*, CB 1 and *Guam* CB 2, of the "Alaska" Class, officially rated as "Large Cruisers", were also stricken in 1960. (Their uncompleted sister ship

Hawaii, CB 3, was stricken on 9 June 1958.
The battleships, *California*, 88 44, and *Tennessee*, 88 43, of the "Tennessee" class; *Colorado*, BB 45, and *Maryland*, 88 46, of the "Colorado" class; and *West Virginia*, BB 48, were scrapped in 1959 (stricken from the Navy List on 1 Mar 1959).
(The following are State Battleship Memorials:—*Alabama*, BB 60, *Massachusetts*, BB 59; *North Carolina*, BB 55; and *Texas*, BB 35).

Ex-Aircraft Carriers—Continued

Name	No.	Laid down	Launched	Completed
COMMENCEMENT BAY (ex-St Joseph's Bay)	AKV 37 (ex-CVHE 105)	23 Sep 1943	9 May 1944	27 Nov 1944
ANNAPOLIS (ex-Gilbert Islands, ex-St Andrew's Bay)	AGMR 1 (ex-AKV 39, ex-CVE 107)	29 Nov 1943	20 July 1944	5 Feb 1945
KULA GULF (ex-Vermillion Bay)	T-AKV 8 (ex-CVE 108) USNS	16 Dec 1943	15 Aug 1944	12 May 1945
CAPE GLOUCESTER (ex-Willapa Bay)	AKV 9 (ex-CVHE 109)	10 Jan 1944	12 Sep 1944	5 Mar 1945
VELLA GULF (ex-Totem Bay)	AKV 11 (ex-CVHE 111)	7 Mar 1944	19 Oct 1944	9 Apr 1945
SIBONEY (ex-Frosty Bay)	AKV 12 (ex-CVE 112)	1 Apr 1944	9 Nov 1944	14 May 1945
RENDOVA (ex-Mosser Bay)	AKV 14 (ex-CVE 114)	15 June 1944	28 Dec 1944	22 Oct 1945
BADOENG STRAIT (ex-San Alberto Bay)	AKV 16 (ex-CVE 116)	18 Aug 1944	15 Feb 1945	14 Nov 1945
SAIDOR (ex-Salter Bay)	AKV 17 (ex-CVE 117)	29 Sep 1944	17 Mar 1945	4 Sep 1945
POINT CRUZ (ex-Trocadero Bay)	T-AKV 19 (ex-CVE 119) USNS	4 Dec 1944	18 May 1945	16 Oct 1946
RABAU	AKV 21 (ex-CVHE 121)	29 Jan 1945	14 July 1945	30 Aug 1946
TINIAN	AKV 23 (ex-CVHE 123)	20 Mar 1945	5 Sep 1945	30 July 1946

CVHE = Helicopter Escort Aircraft Carrier; CVE = Escort Aircraft Carrier; AKV = Cargo ship and Aircraft Ferry; AGMR = Major Communications Relay Ship.

11 Aircraft Ferries (AKV)
1 Rated as Major Communications
Relay Ship (AGMR)

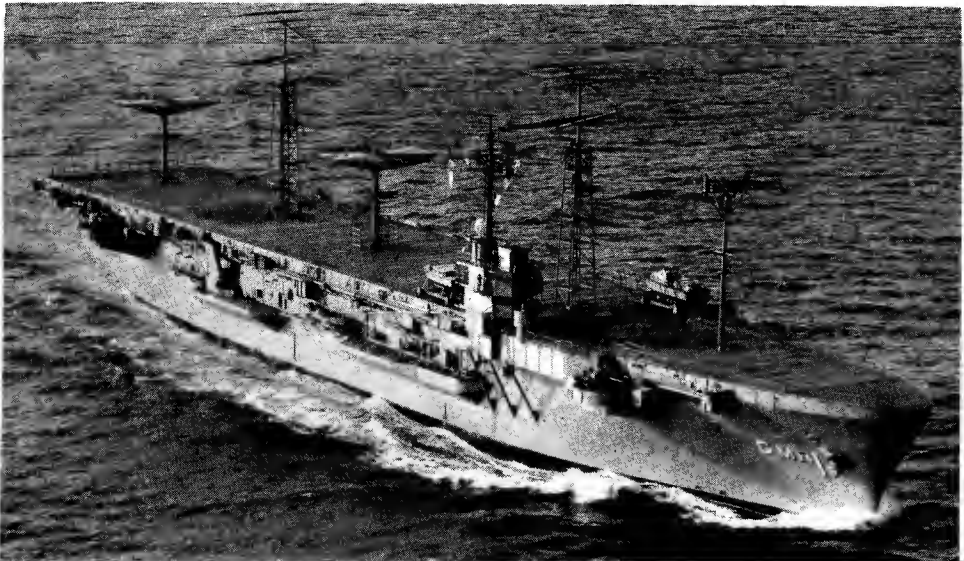
Former Escort Carriers (CVE, CVHE)
12 "Commencement Bay" Class

Displacement, tons	11 473 standard; 24 275 full load <i>Annapolis</i> : 22 500 full load
Length, feet (metres)	557 (169.8) oa <i>Annapolis</i> : 563 (171.6) oa
Beam, feet (metres)	75 (22.9) hull
Draft, feet (metres)	30.7 (9.3)
Width, feet (metres)	105 (32.0) extreme
Aircraft	Originally carried 34
Guns, surface	1—5 in (127 mm) 38 cal. (see Gunnery notes)
Guns, AA	24—40 mm, except— <i>Annapolis</i> 8—3 in (76 mm) 4 twin
Boilers	4
Main engines	Geared turbines 16 000 shp; 2 shafts
Speed, knots	18
Complement	<i>Annapolis</i> : 710 (44 officers, 666 men; <i>Kula Gulf</i> and <i>Point Cruz</i> : 140 (see General notes)

All built by Todd Pacific Shipyard, Tacoma. As escort aircraft carriers their complement was 924 officers and men (peace) and over 1 000 (war). *Kula Gulf* and *Point Cruz* were reactivated in 1965 for MSTs operation and designated T-AKV, USNS, unarmed with civil service crew.

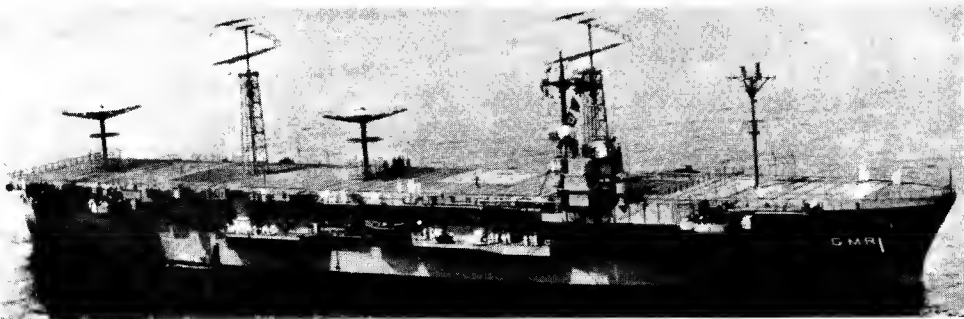
CONVERSION. *Gilbert Islands* was converted into a Major Communications Relay Ship (AGMR) in the Fiscal Year 1963 Programme by New York Naval Shipyard, the contract being awarded on 22 Aug 1962. She was renamed *Annapolis* on 1 June 1963, and recommissioned on 7 Mar 1964, equipped with 24 radio transmitters. *Vella Gulf* was to have been converted to AGMR in the FY 1964 Programme; but her conversion was never commenced (she was to have been renamed *Arlington*), and instead *Saipan*, see next page, was selected for the second AGMR. This type is capable of supplying vital communications services in any sea area in the world.

RECLASSIFICATION. Seven Escort Aircraft Carriers (CVE) of this class were reclassified as Escort Helicopter Aircraft Carriers (CVHE) on 12 June 1955: *Block Island* was reclassified as LPH on 22 Dec 1957, but in 1958 her conversion to Helicopter Amphibious Assault Ship was cancelled and she was reclassified as an AKV on 7 May 1959, when all the remaining 18 ships of the class were also reclassified as AKVs, and stricken on 1 July 1959. *Gilbert Islands* was reclassified as AGMR on



ANNAPOLIS

1964



ANNAPOLIS

1967

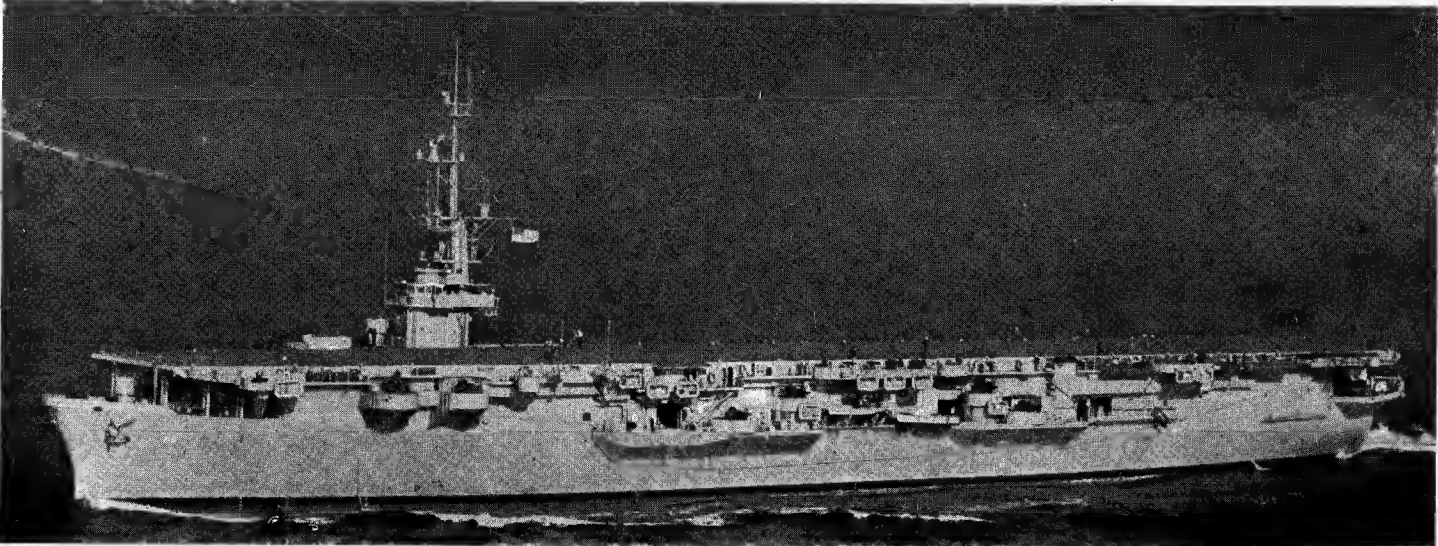
1 June 1963 and renamed *Annapolis*. T indicates assignment to MSTs (Military Sea Transportation Service) and USNS means US Naval Ship.

PHOTOGRAPHS. A starboard broadside surface view of *Siboney* appears in the 1961-62 to 1966-67 editions.

GUNNERY. The after starboard 5 inch gun was removed from the active units. No. 1 40 mm mounting and twelve 20 mm twin mounts latterly carried, instead of the former total of 30, were removed. Four rocket launchers were formerly located amidships, two on each side. *Annapolis* was rearmed in 1963-64.

DISPOSALS
Block Island, AKV 38 (ex-LPH 1, CVE 106) was stricken on 1 July 1959. *Mindoro* AKV 20 (ex-CVE 120) on 1 Dec 1959 and *Bairako*, AKV 15 (ex-CVE 115), *Palau* AKV 22 (ex-CVE 122), *Puget Sound*, AKV 13 (ex-CVHE 113) and *Vella Gulf*, AKV 11 (ex-CVHE 111) in 1960, *Sicily*, AKV 18 (ex-CVE 118) in 1961 and *Gilbert Islands*, AKV 39 (ex-CVE 107) and *Salerno Bay* AKV 10 (ex-CVE 110) on 1 June 1961. *Vella Gulf* and *Gilbert Islands*, however, were reinstated on the Navy List on 1 Nov 1961.

CLASS. Sixteen more ships of this class, *Bastogne*, *Eniwetok*, *Lingayen*, *Okinawa*, and CVE Nos 128 to 139, were cancelled in Aug 1945.



BADOENG STRAIT

United States Navy, Official

Ex-Aircraft Carriers—continued

Name	No.	Builders	Laid down	Launched	Completed	Converted
ARLINGTON (ex-Saipan)	AGMR 2 (ex-CC 3, ex-AVT 6, ex-CVL 48)	New York SB Corp	10 July 1944	8 July 1945	14 July 1945	1963-1965
WRIGHT	CC 2 (ex-AVT 7, ex-CVL 49)	New York SB Corp	21 Aug 1944	1 Sep 1945	9 Feb 1947	1962-1963

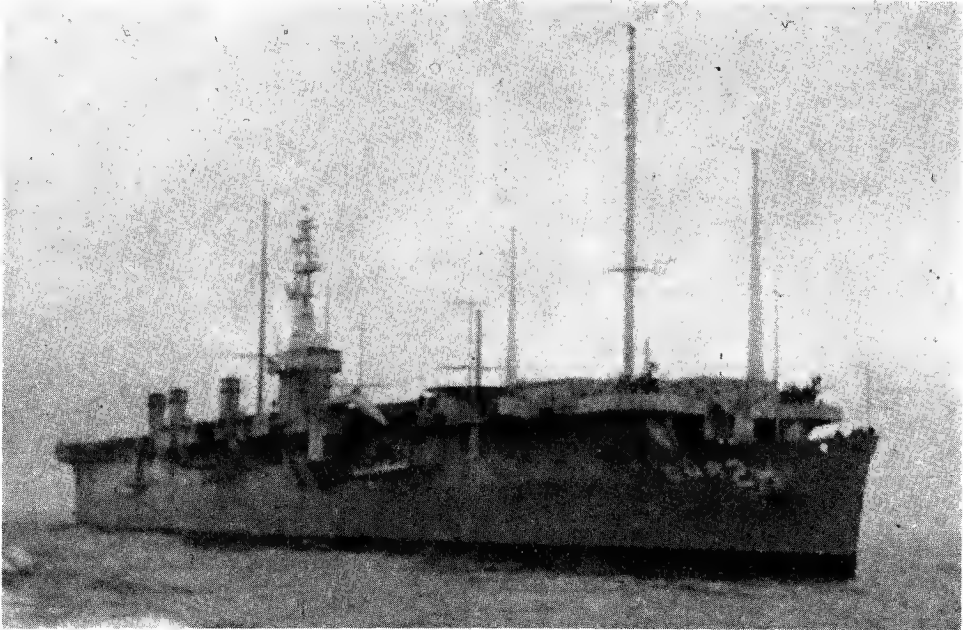
Major Communications Relay Ship (AGMR) and Command Ship (CC)

Ex-Aircraft Transports (AVT),
Former Aircraft Carriers (CVL)

Displacement, tons	14 500 standard; 19 600 full load
Length, feet (metres)	664 (202.4) pp; 684.5 (208.6) oa
Beam, feet (metres)	77.5 (23.6) hull
Draft, feet (metres)	28 (8.5)
Width, feet (metres)	109 (33.2) extreme
Aircraft	Helicopters
Guns, AA	8—40 mm, 4 twin mountings
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	120 000 shp; 4 shafts
Speed, knots	33
Oil fuel (tons)	3 371
Complement	746 ship's company; 1 720 (53 officers, 1 103 men) as Command Ship including commands and staff

Modifications of the "Baltimore" class heavy cruiser design laid down and built as aircraft carriers (CVL). Originally carried over 50 aircraft. The hull below the main (hangar) deck duplicates that of the Camden-built heavy cruisers. Both ships had four funnels but had the fore funnel removed (see two photos of *Saipan* and another photo of *Wright* in the 1957-58 edition). As aircraft carriers the original war complement was 1 821 (243 officers and 1 578 men) but only 775 of 1 007 enlisted men were retained in *Saipan* as training carrier.

CONVERSION. *Wright* was converted into a command ship at Puget Sound Naval Shipyard under the FY 1962 Programme at a cost of \$25 000 000. She recommissioned on 11 May 1963. She has five glass masts 33 to 83 feet high to support antennae. The tallest antennae is 114 feet from deck. Highest point above waterline is 156 feet. She is the Navy's second fully equipped command post. The conversion of *Saipan* into a Command Ship was authorised in FY 1963 Programme. The contract was awarded on 13 Feb 1963 to Alabama Drydock and Shipbuilding Company, Mobile, for the activation, repair and conversion of *Saipan* at a fixed price of \$9 329 173. The ship's primary function after conversion was to serve as an operations communications headquarters ship with the fleet. Her conversion was halted in Feb 1964. She resumed conversion as a Major Communications Relay Ship (AGMR), for which \$26 886 424 was authorised in Sep 1964. She was reclassified as AGMR 2, and renamed *Arlington* in Apr 1965, and recommissioned on 27 Aug 1966.



ARLINGTON

1967, Stefan Terzibaschitsch

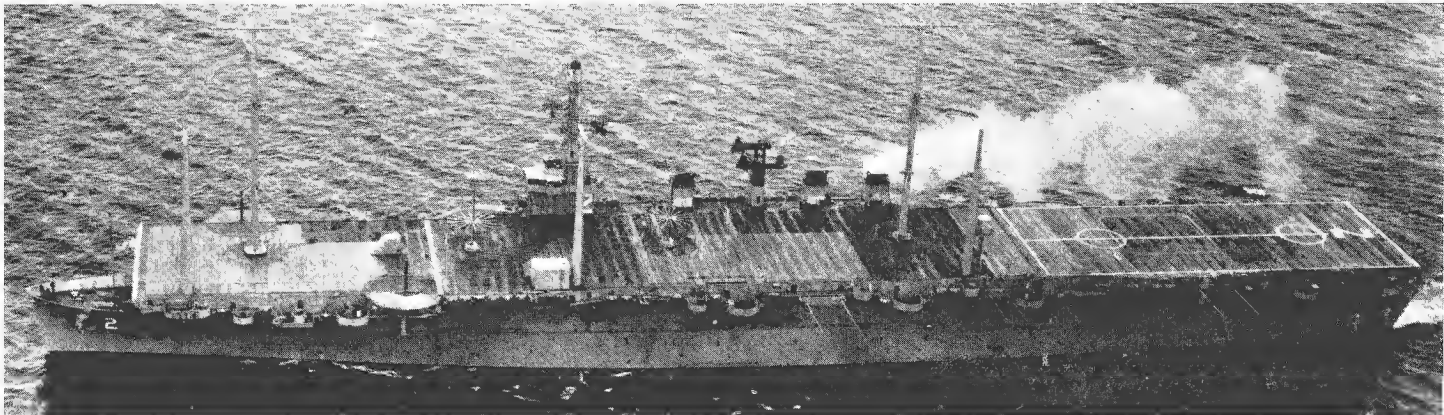
OPERATIONAL. The mission of the command ship is to provide command and control facilities to top echelon commands and staffs. The ship has the most extensive communications facilities ever put aboard ship. Its "voice of command" can be sent to any ship, aircraft or station anywhere in the world. The command spaces have facilities for theatre-type presentations similar to command posts ashore, including projection equipment and motion picture screens. An entire bulkhead is used to display large status boards and maps which are mounted on tracks and can be quickly rolled into view. The concentrated operational control spaces include rooms for war operations, plotting, chart and graphics, emergency action, briefing and conferences. On the ship's antennae deck are arranged the most powerful transmitting antennae ever installed in a naval vessel. More than 200 officers and men are assigned to operate and maintain these antennae and their associated radio and communications equipment. An entire room is given over to the ship's teletype printers, each of which

can record incoming messages at 100 words per minute. The ship is capable of handling as many messages in a day as a major shore-based communications station. *Wright* is one of two ships designated as "NECPA" (National Emergency Command Posts Afloat)—the other is *Northampton*, see following page—mobile stations for national authorities.

RECLASSIFICATION. Both ships were reclassified from aircraft carriers (CVL) to aircraft transports (AVT) on 15 May 1959. *Wright* was reclassified from AVT 7 to CC 2 on 1 Sep 1962 and *Saipan* from AVT 6 to CC 3 on 1 Jan 1964, and to AGMR 2 on 3 Sep 1964.

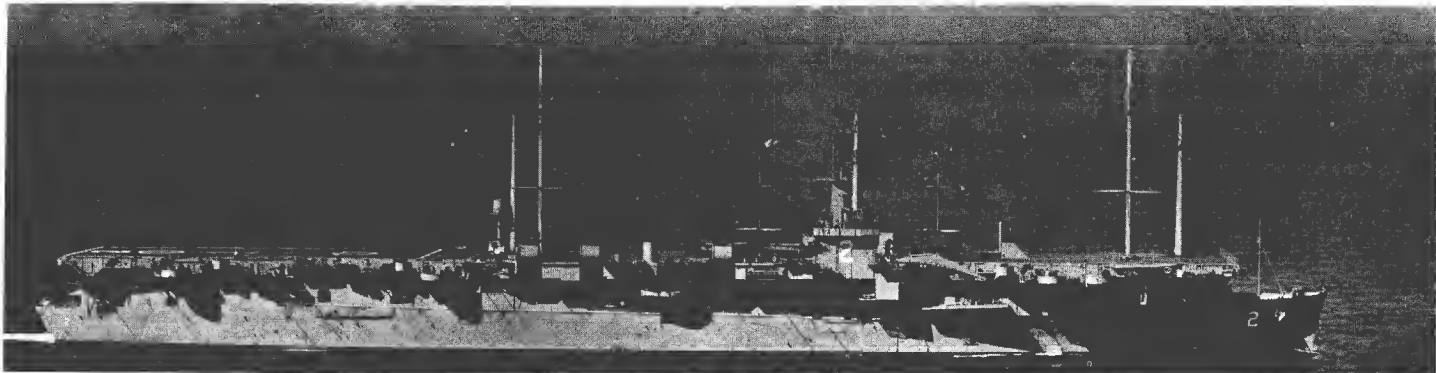
PHOTOGRAPHS. A port bow view of *Wright* appears in the 1964-65 to 1966-67 editions.

DRAWING. Port elevation and plan of these ships as aircraft carriers appears in the 1963-64 and earlier editions.



WRIGHT

1964, United States Navy, Official)



WRIGHT

1966, Official (direct from USS Wright, courtesy Commanding Officer)

COMMAND SHIP (CC)

Name	No.	Builders	Laid down	Launched	Completed
NORTHAMPTON	CC 1 (ex-CLC 1, ex-CA 125)	Bethlehem Co, Quincy, Mass	31 Aug 1944	27 Jan 1951	7 Mar 1953

Formerly rated as
Tactical Command Ship (CLC)
(Ex-Cruiser, Task Fleet Command Ship)
Heavy Cruiser Type

Displacement, tons	14 700 standard; 17 200 full load
Length, feet (metres)	664 (202.4) wl; 677 (206.4) oa
Beam, feet (metres)	71 (21.6)
Draft, feet (metres)	29 (8.8)
Guns, dual purpose	4—5 in (127 mm) 54 cal in single mountings (see <i>Gunnery</i> notes)
Aircraft	2 helicopters
Armour	Side 6 in (152 mm); decks 3 in + 2 in (76 + 51 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	120 000 shp; 4 shafts
Speed, knots	33
Oil fuel (tons)	2 500
Complement	1 237 (62 officers, 1 175 men); Accommodation for 1 657 (227 officers, 1 450 men)

This vessel was originally designed as a heavy cruiser of the modified "Oregon City" class numbered CA 125. She was 57 per cent constructed as such when she was cancelled on 11 August 1945. She was re-ordered 1 July 1948, and re-designed as a Task Force (later Tactical) Command Ship with the new rating CLC 1, for the exclusive use of Task Force commanders in conducting either operations of fast moving carrier task forces or an amphibious assault. Accommodation and equipment were modified accordingly. She is fully air-conditioned with an installation at least as extensive as that of the larger heavy cruiser *Salem* to which she approximates in displacement. She was commissioned on 7 Mar 1953, to fulfil the same functions as an AGC, ie as Operations-Communications-Headquarters Ship, but has more speed, manoeuvrability, armament and anti-aircraft fire than an AGC. Designed to resist atomic attack. Has large installation of newly developed electronic equipment,



NORTHAMPTON (showing former large radar scanner atop the foremast) 1959, Ted Stone

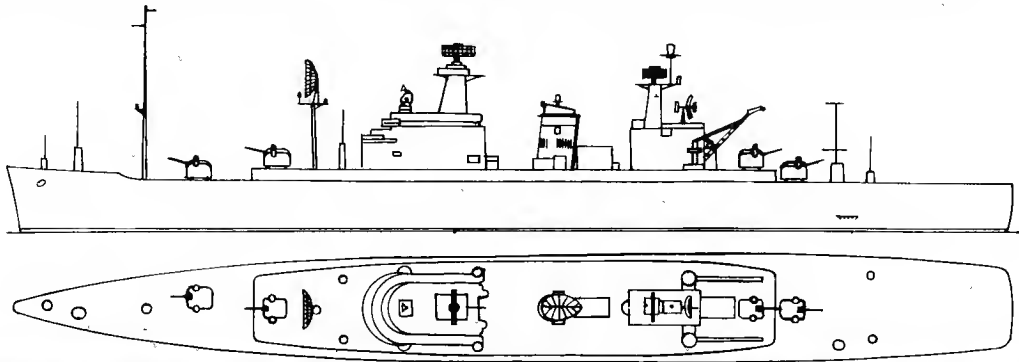
a vast communications network, an imposing array of electronic antennae, and featured one of the largest seaborne radar aerials in the world, but this was removed in 1963. She is one deck higher than a normal cruiser to provide for additional office space, and has the tallest unsupported mast afloat (125 feet). Seven months trials to Nov 1954. First operational assignment was to Atlantic Fleet Amphibious Force as temporary flagship in Nov 1954. Has served as Second Fleet flagship, based at Norfolk, Va. She was reclassified as Command Ship (CC) on 15 Apr 1961, and was relieved as 2nd Fleet Flagship in Oct 1961.

GUNNERY. The main armament comprises four 5 inch dual purpose guns disposed in single mountings two forward and two aft. They have a rate of fire of 54 rounds per minute. The secondary armament comprised eight 3 inch, 70 cal anti-aircraft weapons, also of a

new pattern, disposed in twin turrets, two on each side amidships abreast the funnel, but these were removed in 1962 as they presented a major maintenance problem. *Northampton* is one of two ships (the other is *Wright*, see previous page) designated as "NECPA" (National Emergency Command Post Afloat).

PHOTOGRAPHS. A starboard bow oblique aerial view appears in the 1957-58 edition, a starboard broadside silhouette view in the 1958-59 and 1959-60 editions, a large starboard oblique view in the 1957-58 to 1963-65 editions, a starboard bow oblique aerial view in the 1963-64 edition, and a starboard bow surface view in the 1964-65 to 1966-67 editions.

DRAWING. Port elevation and plan. Redrawn in 1965. Scale: 128 feet = 1 inch.



NORTHAMPTON

1967, United States Navy, Official

SUBMARINES

Name	No	Builders	Laid down	Launched	Commissioned
ALEXANDER HAMILTON	SSBN 617	General Dynamics/Electric Boat	26 June 1961	18 Aug 1962	27 June 1963
ANDREW JACKSON	SSBN 619	Mare Island Naval Shipyard	26 Apr 1961	15 Sep 1962	3 July 1963
BENJAMIN FRANKLIN	SSBN 640	General Dynamics/Electric Boat	25 May 1963	5 Dec 1964	22 Oct 1965
CASIMIR PULASKI	SSBN 633	General Dynamics/Electric Boat	12 Jan 1963	1 Feb 1964	14 Aug 1964
DANIEL BOONE	SSBN 624	Mare Island Naval Shipyard	6 Feb 1962	22 June 1963	23 Apr 1964
DANIEL WEBSTER	SSBN 626	General Dynamics/Electric Boat	28 Dec 1961	27 Apr 1963	9 Apr 1964
FRANCIS SCOTT KEY	SSBN 657	General Dynamics/Electric Boat	5 Dec 1964	23 Apr 1966	3 Dec 1966
GEORGE BANCROFT	SSBN 643	General Dynamics/Electric Boat	24 Aug 1963	20 Mar 1965	22 Jan 1966
GEORGE D. MARSHALL	SSBN 654	Newport News SB & DD Co	2 Mar 1964	21 May 1965	29 Apr 1966
GEORGE WASHINGTON CARVER	SSBN 656	Newport News SB & DD Co	24 Aug 1964	14 Aug 1965	15 June 1966
HENRY CLAY	SSBN 625	Newport News SB & DD Co	23 Oct 1961	30 Nov 1962	20 Feb 1964
HENRY L. STIMSON	SSBN 655	General Dynamics/Electric Boat	4 Apr 1964	13 Nov 1965	20 Aug 1966
JAMES K. POLK	SSBN 645	General Dynamics/Electric Boat	23 Nov 1963	22 May 1965	16 Apr 1966
JAMES MADISON	SSBN 627	Newport News SB & DD Co	5 Mar 1962	15 Mar 1963	28 July 1964
JAMES MONROE	SSBN 622	Newport News SB & DD Co	31 July 1961	4 Aug 1962	7 Dec 1963
JOHN ADAMS	SSBN 620	Portsmouth Naval Shipyard	19 May 1961	12 Jan 1963	12 May 1964
JOHN C. CALHOUN	SSBN 630	Newport News SB & DD Co	4 June 1962	22 June 1963	15 Sep 1964
KAMEHAMEHA	SSBN 642	Mare Island Naval Shipyard	2 May 1963	16 Jan 1965	10 Dec 1965
LAFAYETTE	SSBN 616	General Dynamics/Electric Boat	17 Jan 1961	8 May 1962	23 Apr 1963
LEWIS AND CLARK	SSBN 644	Newport News SB & DD Co	29 July 1963	21 Nov 1964	22 Dec 1965
MARIANO G. VALLEJO	SSBN 658	Mare Island Naval Shipyard	7 July 1964	23 Oct 1965	16 Dec 1966
NATHAN HALE	SSBN 623	General Dynamics/Electric Boat	2 Oct 1961	12 Jan 1963	23 Nov 1963
NATHANIEL GREENE	SSBN 636	Portsmouth Naval Shipyard	21 May 1962	12 May 1964	19 Dec 1964
SAM RAYBURN	SSBN 635	Newport News SB & DD Co	3 Dec 1962	20 Dec 1963	2 Dec 1964
SIMON BOLIVAR	SSBN 641	Newport News SB & DD Co	17 Apr 1963	22 Aug 1964	29 Oct 1965
STONEWALL JACKSON	SSBN 634	Mare Island Naval Shipyard	4 July 1962	30 Nov 1963	26 Aug 1964
TECUMSEH	SSBN 628	General Dynamics/Electric Boat	1 June 1962	22 June 1963	29 May 1964
ULYSSES S. GRANT	SSBN 631	General Dynamics/Electric Boat	18 Aug 1962	2 Nov 1963	17 July 1964
VON STEUBEN	SSBN 632	Newport News SB & DD Co	4 Sep 1962	18 Oct 1963	30 Sep 1964
WILL ROGERS	SSBN 659	General Dynamics/Electric Boat	20 Mar 1965	21 July 1966	1 Apr 1967
WOODROW WILSON	SSBN 624	Mare Island Naval Shipyard	13 Sep 1961	22 Feb 1963	27 Dec 1963

Nuclear Powered Fleet Ballistic Missile Submarines (SSBN)

31 "Lafayette" Class

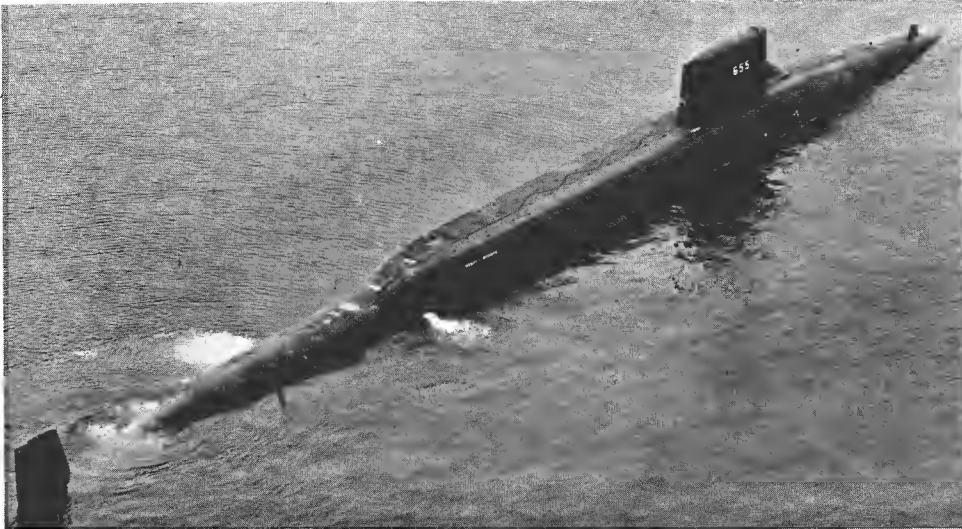
Displacement, tons	7 250 surface; 8 250 submerged
Length, feet (metres)	425 (129.5)
Beam, feet (metres)	33 (10.1)
Draft, feet (metres)	31.5 (9.6) max
Missiles, surface	16 tubes for "Poseidon" ICBM's, range over 2 500 nautical miles (see Missile launching notes)
Torpedo tubes	4—21 in (533 mm) forward
Nuclear reactors	1 Pressurised water-cooled S5W
Main engines	Geared turbines 15 000 shp; 1 shaft
Speed, knots	20 surface; 28 submerged
Complement	140 (14 officers, 126 men)

These latest ballistic missile submarines are the largest undersea craft ever built. The light surface displacement is 6 650 tons. *Lafayette*, named after the French aristocrat who served with Washington in the American Revolution, was the prototype and lead ship. Construction plans and design were awarded to the Electric Boat Division, Groton, Connecticut, on 24 Mar 1960. The first four were authorised under the 1960 New Construction Programme, five more under the 1961 programme and ten under the 1962 programme. Cost \$109 500 000 each. SSBN 640-645 were authorised in the Fiscal Year 1963 New Construction Programme. Advanced nuclear powered fleet ballistic missile submarines capable of firing the A-3 model "Polaris" missile while surfaced or submerged. These six 1963 Programme units, together with six more in the 1964 Programme, brought the number of ballistic missile submarines up to the total of 41 planned.

MISSILE LAUNCHING. The first eight of this class were fitted with A-2 "Polaris" missiles with 1 500 nautical miles range and later ships with A-3 "Polaris" missiles with 2 500 nautical miles range. "Polaris" missiles are being replaced by "Poseidon" in all ships of this class. The missiles are launched from 16 vertical tubes within the submarine's hull, by compressed air, except the six units provided for under the Fiscal Year 1964 Programme, which have steam launchers for the missiles. Missiles ejected by compressed air in all SSBNs prior to *Nathan Hale* and all subsequent. Small solid rocket motor burns and pours its extremely hot gases into a water-filled chamber where steam is produced instantaneously, which ejects missile. *Andrew Jackson* launched the first A-3 polaris missile from a submarine on 26 Oct 1963 off Cape Canaveral (Kennedy) Fla. Missile fired by compressed air. 15 tons, 2 500 miles.



ANDREW JACKSON 1965, United States Navy, Official

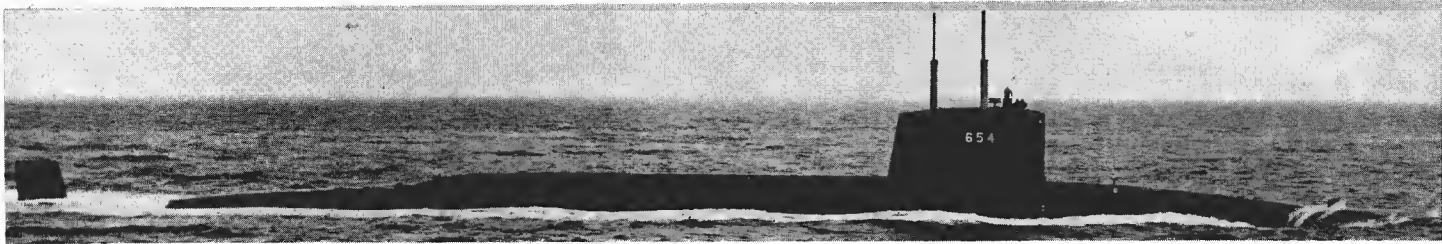


HENRY L. STIMSON 1967, United States Navy, Official

ENGINEERING. SSBN 640 *et seq* were re-engined. SSBN 654 *et seq* were re-engined, but are of SSBN 616 class.

DIVING. *Daniel Webster* had diving planes on bow instead of sail, the only one of the class so fitted.

PHOTOGRAPHS. A larger photograph of *Lafayette* appears in the 1963-64 edition, an oblique aerial view of *Lafayette* in the 1963-64 and 1964-65 editions, a photograph of *Henry Clay* launching a Polaris missile in the Frontispiece of the 1964-65 edition, a starboard bow oblique aerial view of *Alexander Hamilton* in the 1963-64 to 1966-67 editions, and a starboard dead broadside view of *Henry Clay* in the 1964-65 to 1966-67 editions.



GEORGE C. MARSHALL 1967, United States Navy, Official

Submarines—continued

Name	No.	Builders	Laid down	Launched	Completed
ETHAN ALLEN	SSBN 608	Electric Boat, General Dynamics	14 Sep 1959	22 Nov 1960	8 Aug 1961
JOHN MARSHALL	SSBN 611	Newport News SB & DD Co	4 Apr 1960	15 July 1961	21 May 1962
SAM HOUSTON	SSBN 609	Newport News SB & DD Co	28 Dec 1959	2 Feb 1961	6 Mar 1962
THOMAS A. EDISON	SSBN 610	Electric Boat, General Dynamics	15 Mar 1960	15 June 1961	10 Mar 1962
THOMAS JEFFERSON	SSBN 618	Newport News SB & DD Co	3 Feb 1961	24 Feb 1962	4 Jan 1963

Nuclear Powered Fleet Ballistic Missile Submarines (SSBN)

5 "Ethan Allen" Class

Displacement, tons	6 900 surface; 7 900 submerged
Length, feet (metres)	410 (125·0)
Beam, feet (metres)	33 (10·1)
Draft, feet (metres)	30·7 (9·4)
Missiles, surface	16 tubes for A-2 Polaris ICBM's with range of 1 500 nautical miles
Torpedo tubes	4—21 in (533 mm) forward
Nuclear reactor	1 pressurised water-cooled S5W
Main engines	Geared turbines
	15 000 shp; 1 shaft
Speed, knots	20 on surface; 28 submerged
Complement	112 (12 officers, 100 men)
	Two separate crews for each submarine, which relieve each other at approximately 3-month intervals

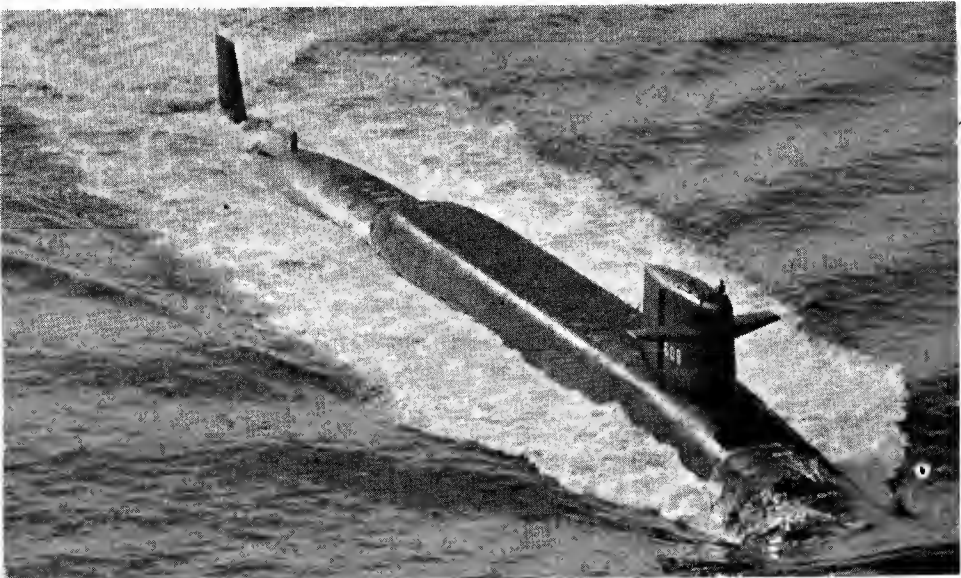
Ethan Allen was the lead ship in a new class of fleet ballistic missile submarines, larger than the "George Washington" class, with a new hull design. She cost \$105 000 000. The class is of a larger and much improved type over the first group of SSBNs. One big difference is that the hull was specially designed to accommodate the missiles, whereas the hulls of the first five SSBNs were adapted from existing hull designs

CONVERSION. All this class are to be refitted for A-3 "Polaris" missiles.

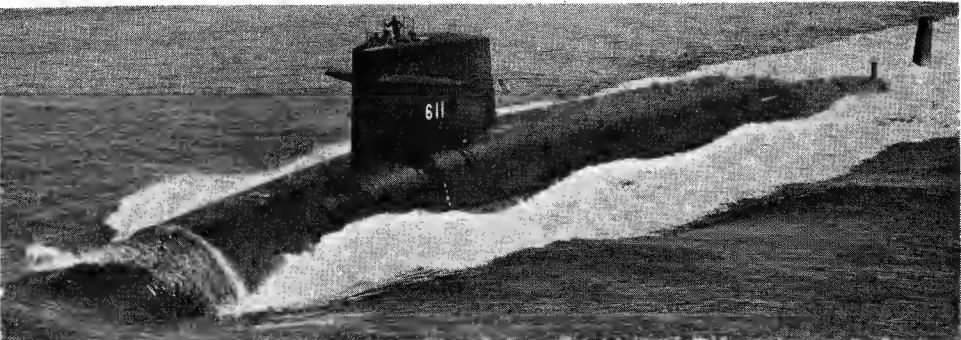
CONSTRUCTION. The contracts for Sam Houston, Thomas A. Edison and John Marshall, were awarded on 1 July 1959. The completion dates given in the table above are commissioning dates.

ENGINEERING. GE turbines in Ethan Allen and Thomas A. Edison, Westinghouse in others. Seven bladed propeller.

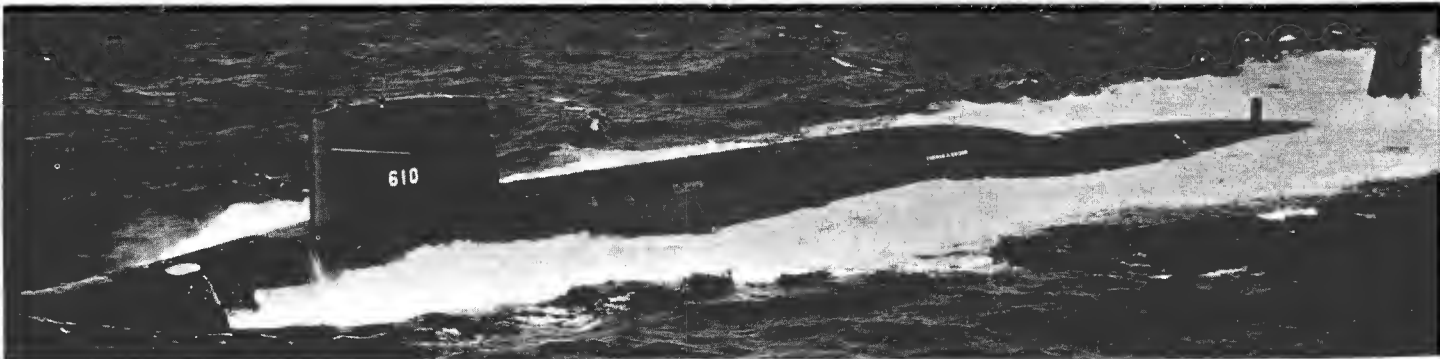
PHOTOGRAPHS. A larger photograph of Ethan Allen showing sonar dome forward appears in the 1963-64 edition, and a large oblique aerial view of Thomas A. Edison in the 1962-63 to 1964-65 editions. A port surface view of Ethan Allen appears in the 1962-63 to 1965-66 editions. A starboard bow oblique aerial view of Sam Houston appears in the 1962-63 to 1965-66 editions. A large port bow oblique aerial view of John Marshall appears in the 1964-65 and 1965-66 editions.



ETHAN ALLEN 1966, General Dynamics/Electric Boat



JOHN MARSHALL 1966



THOMAS A. EDISON 1966, General Dynamics/Electric Boat



THOMAS JEFFERSON 1965, United States Navy, Official

Submarines continued—

Name	No.	Builders	Laid down	Launched	Completed
ABRAHAM LINCOLN	SSBN 602	Portsmouth Naval Shipyard	1 Nov 1958	14 May 1960	31 Jan 1961
GEORGE WASHINGTON	SSBN 598	Electric Boat, General Dynamics	1 Nov 1957	9 June 1959	15 Nov 1959
PATRICK HENRY	SSBN 599	Electric Boat, General Dynamics	27 May 1958	22 Sep 1959	7 Mar 1960
ROBERT E. LEE	SSBN 601	Newport News SB & DD Co	25 Aug 1958	18 Dec 1959	31 Sep 1960
THEODORE ROOSEVELT	SSBN 600	Mare Island Naval Shipyard	20 May 1958	3 Oct 1959	12 Dec 1960

Nuclear Powered Fleet Ballistic Missile Submarines (SSBM)

5 "George Washington" Class

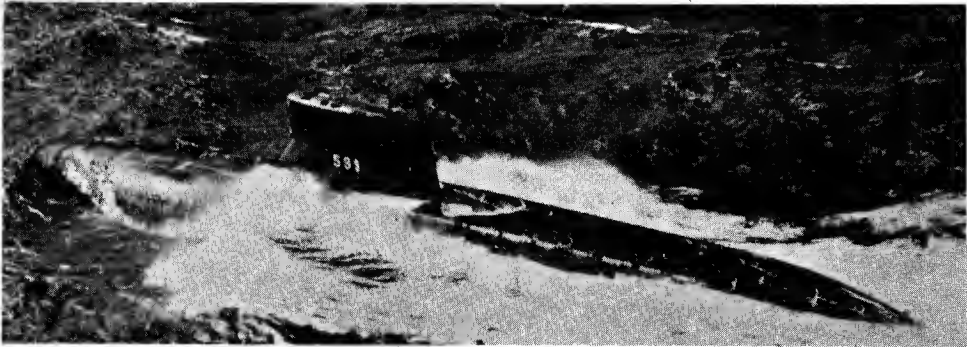
Displacement, tons	6 010 surface; 6 700 submerged
Length, feet (metres)	382 (116.4)
Beam, feet (metres)	33 (10.1)
Draft, feet (metres)	29 (8.8)
Missiles, surface	16 tubes for A-3 Polaris IC8M's with range of 2 500 nautical miles (see Missiles notes)
Torpedo tubes	6—21 in (533 mm) forward
Nuclear reactor	1 pressurised water-cooled S5W
Main engines	Geared turbine
Speed, knots	15 000 shp; 1 shaft
Complement	20 on surface; 28 submerged
	112 (12 officers, 100 men)
	Two separate crews designated "Blue" and "Gold" relieve each other at about 3-month intervals
Accommodation	139 (12 officers, 127 men)

The first 1957-58 Supplemental New Construction Programme signed on 11 Feb 1958 provided \$296 000 000 for the construction of three nuclear powered submarines armed with "Polaris" ballistic missiles. They had the "Albacore" type hull, giving them high underwater speed, and were equipped with "SINS" the new navigational system, and new stabilising and electronics apparatus incorporating the most recent engineering advances. They were designed specifically for launching "Polaris" missiles, fired submerged, vertically from within the submarine, and "Subroc" anti-ship missiles fired through torpedo tubes. They differ from nuclear powered submarines of subsequent construction chiefly in their missiles feature. Ordered on 14 Feb 1958. This class have an auxiliary diesel engine and batteries, both of which can be used for emergency propulsion. In July 1958 contracts were awarded for two more nuclear powered submarines for carrying "Polaris" missiles, under the Second 1957-58 Supplemental New Construction programme. With whale-shaped hulls, they are of modified "Skipjack" design with a 128 ft missile launching section inserted. The light surface displacement is 5,600 tons.

MISSILES. *George Washington* successfully fired the solid-fuelled "Polaris" missile for the first time from a submarine from a submerged position on 20 July 1960. The sixteen launching tubes amidships for the 31 feet long, 54 inch diameter, 15 ton missiles with nuclear warheads, capable of being launched while surfaced or submerged, are arranged in double vertical rows along the after deck abaft the "sail" (conning tower fin). The gyrostabiliser has an 8 ft diameter wheel with a weight of 22 tons and a total weight of 50 tons. All sixteen missiles can be fitted in fifteen minutes. *George Washington* was converted to launch A-3 model "Polaris" missiles with a range of 2 500 nautical miles during an eighteen-months overhaul from June 1964 to Dec 1965 at Groton, Conn. She also underwent nuclear reactor core replacement, her first "refuelling" after steaming over 100 000 miles. The other four ships of this class also converted to the A-3 "Polaris" installation. The "A-1" model "Polaris" missile "retired" in Oct 1965.

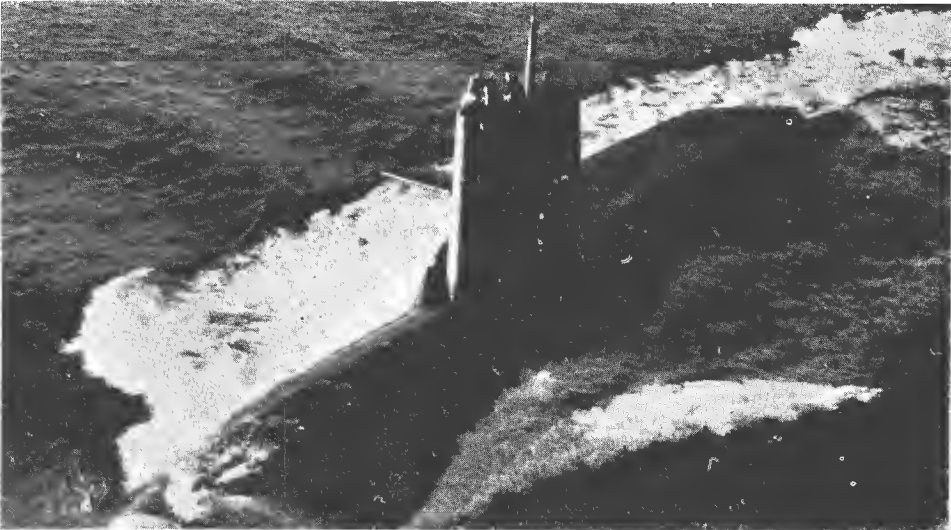
PHOTOGRAPHS. A large starboard broadside surface view of *George Washington* and a port quarter oblique aerial view of *Patrick Henry* appear in the 1960-61 and 1961-62 editions, and a port bow oblique aerial view of *Patrick Henry* in the 1960-61 to 1962-63 editions. A port bow surface view of *George Washington* appears in the 1960-61 to 1965-66 editions.

NOMENCLATURE. All nuclear powered fleet ballistic missile submarines are named after men famous in American history.



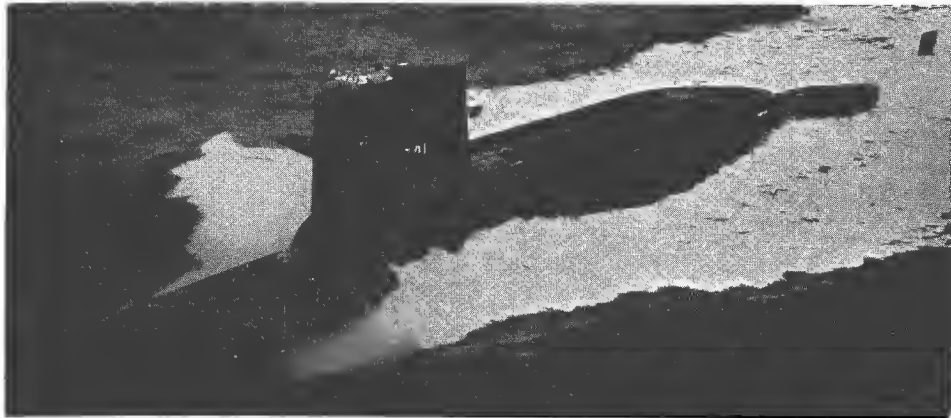
PATRICK HENRY

General Dynamics/Electric Boat



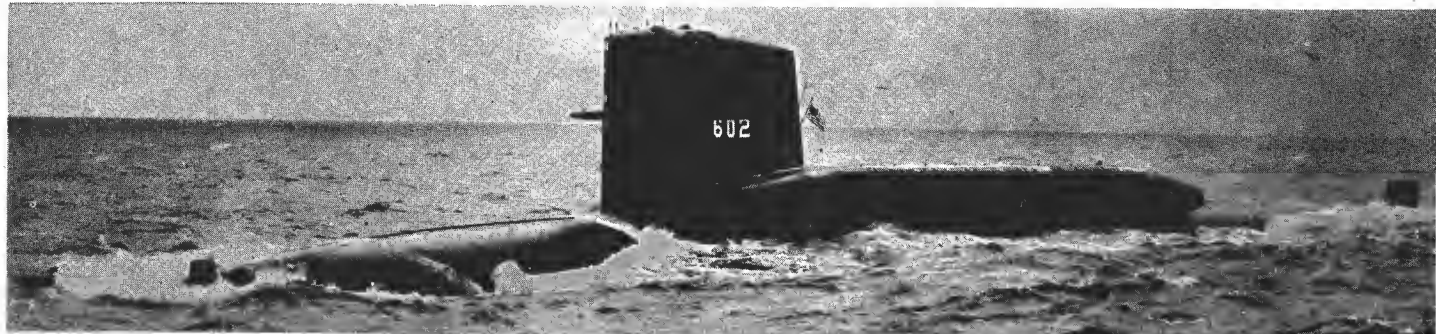
THEODORE ROOSEVELT

1963, United States Navy, Official



ROBERT E. LEE

1961, United States Navy, Official



ABRAHAM LINCOLN

1961, United States Navy, Official

Submarines—continued

Name	No.	Builders	Laid down	Launched	Completed
ASPRO	SSN 648	Ingalls Shipbuilding Corpn, Pascagoula, Miss	23 Nov 1964	Sep 1967	
BARB	SSN 596	Ingalls Shipbuilding Corpn, Pascagoula, Miss	9 Nov 1959	12 Feb 1962	17 Aug 1963
BERGALL	SSN 667	Electric Boat Div, General Dynamics Corpn	16 Apr 1966		
DACE	SSN 607	Ingalls Shipbuilding Corpn, Pascagoula, Miss	6 June 1960	18 Aug 1962	4 Apr 1964
FINBACK	SSN 670	Newport News SB & DD Co	June 1967		
FLASHER	SSN 613	Electric Boat Div, General Dynamics Corpn	14 Apr 1961	22 June 1963	22 July 1966
FLYING FISH	SSN 673	Electric Boat Division, General Dynamics, Groton			
GATO	SSN 615	General Dynamics Corpn, Quincy, Mass	15 Dec 1961	14 May 1964	July 1967
GRAYLING	SSN 646	Portsmouth Naval Shipyard, New Hampshire	12 May 1964	22 June 1967	
GREENLING	SSN 614	General Dynamics Corpn, Quincy, Mass	15 Aug 1961	4 Apr 1964	May 1967
GUARDFISH	SSN 612	New York Shipbuilding Corpn, Camden, NJ	28 Feb 1961	15 May 1965	20 Dec 1966
GUITARRO	SSN 665	Mare Island Naval Shipyard, California	9 Dec 1965	June 1967	
GURNARD	SSN 662	Mare Island Naval Shipyard, California	22 Dec 1964	20 May 1967	Dec 1967
HADDO	SSN 604	New York Shipbuilding Corpn, Camden, NJ	9 Sep 1960	18 Aug 1962	16 Dec 1964
HADDOCK	SSN 621	Ingalls Shipbuilding Corpn, Pascagoula, Miss	24 Apr 1961	21 May 1966	Oct 1967
HAMMERHEAD	SSN 663	Newport News SB & DD Co	29 Nov 1965	14 Apr 1967	
HAWKBILL	SSN 666	Mare Island Naval Shipyard, California	12 Sep 1966	Dec 1967	
JACK	SSN 605	Portsmouth Naval Shipyard, New Hampshire	16 Sep 1960	24 Apr 1963	31 Mar 1967
LAPON	SSN 661	Newport News SB & DD Co	26 July 1965	16 Dec 1966	Nov 1967
NARWHAL	SSN 671	Electric Boat Div, General Dynamics Corpn	17 Jan 1966	May 1967	
PARGO	SSN 650	Electric Boat Div, General Dynamics Corpn	3 June 1964	17 Sep 1966	8 July 1967
PERMIT	SSN 594	Mare Island Naval Shipyard, California	16 July 1959	1 July 1961	6 June 1962
PINTADO	SSN 672	Mare Island Naval Shipyard, California	June 1967		
PLUNGER	SSN 595	Mare Island Naval Shipyard, California	2 Mar 1960	9 Dec 1961	21 Nov 1962
POGY	SSN 647	* New York Shipbuilding Corpn, Camden, NJ	5 May 1964	Apr 1967	
POLLACK	SSN 603	New York Shipbuilding Corpn, Camden, NJ	14 Mar 1960	17 Mar 1962	26 May 1964
PUFFER	SSN 652	Ingalls Shipbuilding Corpn, Pascagoula, Miss	8 Feb 1965		
QUEENFISH	SSN 651	Newport News SB & DD Co	11 May 1964	25 Feb 1966	6 Dec 1966
RAY	SSN 653	Newport News SB & DD Co	4 Jan 1965	21 June 1966	12 Apr 1967
SAND LANCE	SSN 660	Portsmouth Naval Shipyard, New Hampshire	15 Jan 1965		
SEA DEVIL	SSN 664	Newport News SB & DD Co	12 Apr 1966	Nov 1967	
SEAHORSE	SSN 669	Electric Boat Division, General Dynamics Corpn	13 Aug 1966		
SPADEFISH	SSN 668	Newport News SB & DD Co	21 Dec 1966		
STURGEON	SSN 637	Electric Boat Div, General Dynamics Corpn	10 Aug 1963	26 Feb 1966	3 Mar 1967
SUNFISH	SSN 649	* General Dynamics Corpn, Quincy, Mass	15 Jan 1965	14 Oct 1966	Nov 1967
TAUTOG	SSN 639	Ingalls Shipbuilding Corpn, Pascagoula, Miss	27 Jan 1964	15 Apr 1967	
TINOSA	SSN 606	Portsmouth Naval Shipyard, New Hampshire	24 Nov 1959	9 Dec 1961	17 Oct 1964
WHALE	SSN 638	* General Dynamics Corpn, Quincy, Mass	27 May 1964	14 Oct 1966	Aug 1967

Nuclear Powered Attack Submarines (SSN)

38 + 12 "Thresher" Group

Displacement, tons	3 750 surface; 4 300 submerged (see Class Variations note)
Length, feet (metres)	278 5 (84 9)
Beam, feet (metres)	31 8 (9 7)
Draft, feet (metres)	25 2 (7 7)
Torpedo tubes	4—21 in (533 mm) amidships
A/S weapons	"Subroc" (see A/S Warfare)
Nuclear reactor	1 pressurised water-cooled S5W
Main engines	Geared turbines
	15 000 shp; 1 shaft
Speed, knots	20 on surface; 30 submerged
Radius, miles	60 000 without refuelling
Complement	107 (12 officers, 95 men)

Of improved design with "tear-drop" hull. Diving planes attached to "sail" or conning tower fin, instead of bow, to improve manoeuvrability. Torpedo tubes set in both sides amidships instead of in bow. Capable of diving deeper and running more quietly at high speeds than other submarines. Diving and steering operations controlled automatically by push buttons. Long range sonar. Cost \$49 000 000 to \$57 000 000 each. *Sunfish and Whale were taken over by General Dynamics Corporation which acquired Bethlehem Quincy Yard in 1964. Pogy moving to other yard.

SHIPBUILDING PROGRAMME YEAR 1958: Barb, Permit, Plunger. 1959: Dace, Haddo, Jack, Pollack, Tinosa. 1960: Flasher, Gato, Greenling, Guardfish. 1961: Haddock. 1962: Sturgeon, Tautog, Whale. 1963: Aspro, Grayling, Pargo, Pogy, Puffer, Queenfish, Ray, Sunfish. Six more in the 1964 programme, six in 1965, six in 1966, five in 1967, three in 1968.

CLASS VARIATIONS. The above particulars refer to the original "Thresher" (now "Permit") class: Barb, Dace, Flasher, Gato, Greenling, Guardfish, Haddo, Haddock, Jack, Permit, Plunger, Pollack and Tinosa. Flasher, Gato and Greenling, while under construction, were lengthened to 292 feet due to heavier machinery and bridge structures. Jack is 295 5 feet long with a submerged displacement of 4 500 tons. The "Sturgeon" class is of modified type with improved sonar and torpedo fire control features. 292 2 oa x 31 7 x 28 8 max feet, 4 640 tons full load. "Narwhal" class, is of modified ASW design: 4 450 tons surface, 5 350 submerged, 303 x 38 x 29 max feet, 17 000 shp.



PLUNGER

1963, United States Navy, Official

NOMENCLATURE. Name of SSN 596 was changed from Plunger to Pollack on 28 Apr 1959 and to Barb on 23 July 1959, when SSN 603 was changed from Barb to Pollack.

ANTI-SUBMARINE WARFARE. The SUBROC anti-submarine missile is fired from a conventional 21-inch torpedo tube, after which it streaks for the surface, leaves the water in a ballistic trajectory and re-enters miles from the launching submarine. Back in the water, SUBROC becomes a submarine hunting torpedo. Either a high explosive or nuclear warhead can be fitted.

LOSS. Thresher, SSN 593, prototype and name-ship of

the class was lost on 10 Apr 1963 during diving trials.

ENGINEERING. Jack is fitted with two propellers on one shaft, rotating in opposite direction, with one shaft within a larger sleeve-like shaft. Also fitted with a new design counter-rotating turbine without a reduction gear. Both innovations were designed to reduce operating noises. To accommodate the larger turbine the engine spaces are lengthened by ten feet and the shaft structure is seven feet longer to make room for the second propeller. The propellers are of different size and smaller than in other "Thresher" class submarines. There is a ten per cent increase in power efficiency, but no increase in speed over her sister ships.



TINOSA

1965, United States Navy, Official

Submarines—continued

Name	No.	Builders	Laid down	Launched	Completed
TRITON	SSN (ex-SSRN) 586	Electric Boat Division, General Dynamics Corporation, Groton	21 May 1956	19 Aug 1958	10 Nov 1959

Nuclear Powered Attack Submarine (SSN)

(Ex-Radar Picket Submarine SSRN)
1 Cruiser Type

Displacement, tons	5 940 surface; 7 780 submerged
Length, feet (metres)	447.5 (136.4)
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	24 (7.3)
Torpedo tubes	6—21 in (533 mm), 4 fwd, 2 aft
Nuclear reactors	2 GE S4G pressurised water-cooled

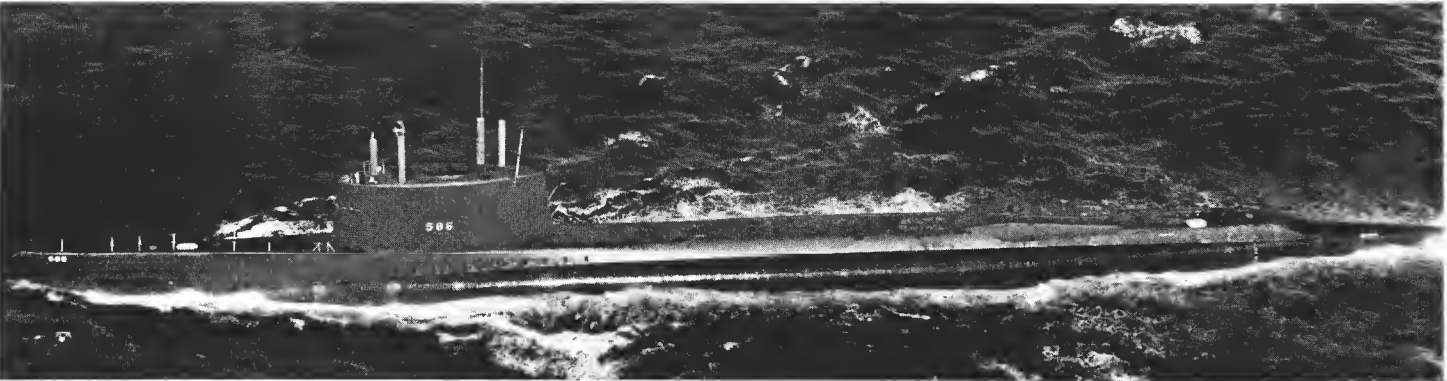
Main engines	2 GE geared turbines 34 000 shp; 2 shafts
Speed, knots	27 on surface; 30 submerged
Radius, miles	110 000 without refuelling
Complement	170 (14 officers, 156 men)

The world's largest and most powerfully engined submarine. Provided under the 1956 Naval Appropriations. Originally designed to serve as an early warning station for task forces and to keep up with the fastest aircraft carriers and destroyers. The first nuclear powered radar picket submarine, the largest submarine ever built, and the first to be powered with two nuclear reactors. Her design emphasised fast surface speed so that she could better accomplish her specialised duties. She has three

deck levels within her hull. Cost \$100 000 000. She circumnavigated the globe submerged in 1960 for 83 days and 41 500 miles at an average speed of 18 knots. She refuelled in mid-1962 after steaming 110 000 miles.

PHOTOGRAPHS. A large port broadside surface view, a starboard bow oblique aerial view and a starboard bow surface view appear in the 1960-61 and 1961-62 editions, a dead broadside surface view in the 1962-63 to 1965-66 editions, and a port broadside aerial view looking down into the "sail" in the 1961-62 to 1966-67 editions.

RECLASSIFICATION. *Triton* was reclassified from SSRN to SSN in Mar 1961.



TRITON

1967, United States Navy, Official

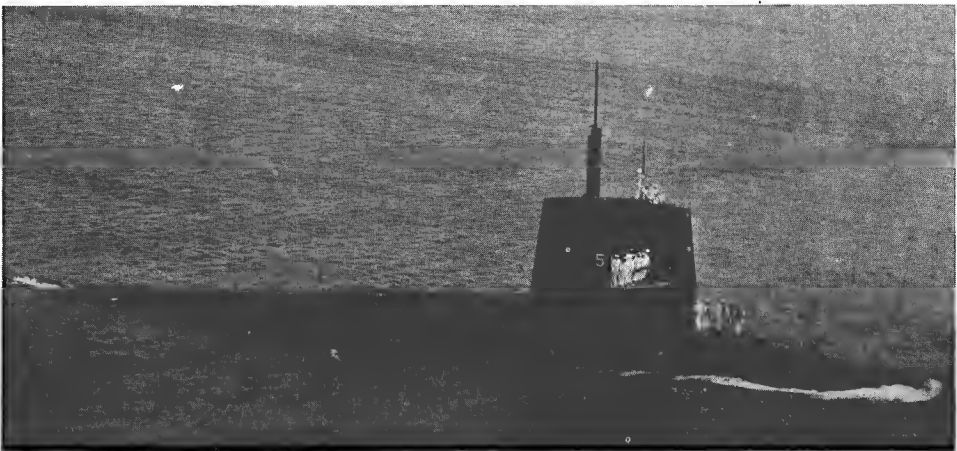
Name	No.	Builders	Laid down	Launched	Completed
SKIPJACK	SSN 585	Electric Boat, General Dynamics	29 May 1956	26 May 1958	8 Mar 1959
SCAMP	SSN 588	Mare Island Naval Shipyard	23 Jan 1959	8 Oct 1960	10 Apr 1961
SCORPION	SSN 589	Electric Boat, General Dynamics	20 Aug 1958	19 Dec 1959	27 June 1960
SCULPIN	SSN 590	Ingalls Shipbuilding Corporation	3 Feb 1958	31 Mar 1960	28 Mar 1961
SHARK	SSN 591	Newport News SB & DD Co	24 Feb 1958	16 Mar 1960	9 Feb 1961
SNOOK	SSN 592	Ingalls Shipbuilding Corporation	7 Apr 1958	31 Oct 1960	4 Nov 1961

Nuclear Powered Attack Submarines (SSN)

6 "Skipjack" Class

Displacement, tons	3 075 surface; 3 500 submerged
Length, feet (metres)	252 (76.8)
Beam, feet (metres)	32 (9.8)
Draft, feet (metres)	28 (8.5)
Torpedo tubes	6 bow; 24 torpedoes carried
Nuclear reactor	1 S5W pressurised water-cooled
Main engines	Geared turbines; Westinghouse in <i>Skipjack</i> ; GE in others
Speed, knots	15 000 shp; 1 shaft
Radius, miles	20 on surface; 35 submerged
Complement	60 000 without refuelling
	93 (8 officers, 85 men)

Skipjack, the prototype of the class, was built under the Fiscal Year 1956 programme and the other five under the 1957 programme. They have the "Albacore" type streamline hull configuration based on the shape of a whale, a "tear-drop" nose, and single screw propulsion. They incorporate several novel features, including hydro-wings or diving planes fitted to the "fin" or "sail", as the conning tower is now called, instead of being encumbered by bow hydroplanes. Maximum depth over 400 feet. Cost \$40 000 000 each. *Scorpion* set endurance record for sealed atmosphere for 70 consecutive days in 1962.



SHARK

1967, A. & J. Pavia

ENGINEERING. The five-bladed propeller provides maximum speed and manoeuvrability. There are auxiliary diesels for emergency propulsion.

PHOTOGRAPHS. A port bow oblique aerial view of the prototype and name-ship of the class, *Skipjack*, at speed appears in the 1959-60 to 1966-67 editions.



SCORPION

1962, United States Navy, Official

Submarines—continued

Nuclear Powered Attack Submarines (SSN)

4 "Skate" Class

Displacement, tons 2 570 surface; 2 861 submerged
Length, feet (metres) 267·7 (81·6) oa
Beam, feet (metres) 25 (7·6)
Draft, feet (metres) 21·2 (6·5)
Torpedo tubes 6—21 in (533 mm), 4 fwd, 2 aft
Nuclear reactor 1 S3W or S4W water-cooled
Main engines Westinghouse geared turbines
6 600 shp; 2 shafts
Speed, knots 20 on surface; 25 submerged
Complement 95 (8 officers, 87 men)

Skate was provided under the 1954 FY programme, Swordfish under the 1955, Sargo and Seadragon under 1956. All have stern diving planes, twin screws and a hull configuration similar to that of Nautilus and Seawolf. On 9 Aug 1958 Skate completed the second submerged crossing of the North Pole after having held the (then) record of 32 days submerged; and she completed a 12-day sub-Polar cruise, surfacing on 17 Mar 1959 at the North Pole. She steamed a record of 120 862 miles on her first core and was refuelled for the first time after 39 months service in May 1961. She underwent a one year overhaul at Norfolk Naval Shipyard in 1965 to replace

Name	No.	Builders	Laid down	Launched	Completed
SARGO	SSN 583	Mare Island Naval Shipyard	21 Feb 1956	10 Oct 1957	10 Oct 1958
SEADRAGON	SSN 584	Portsmouth Naval Shipyard	20 June 1956	16 Aug 1958	5 Dec 1959
SKATE	SSN 578	Electric Boat, General Dynamics	21 July 1955	16 May 1957	23 Dec 1957
SWORDFISH	SSN 579	Portsmouth Naval Shipyard	25 Jan 1956	27 Aug 1957	15 Sep 1958



SWORDFISH

1966

radioactive core and make noise reduction alterations. Seadragon transited Northwest Passage east to west 15—21 Aug 1960 (Atlantic to Arctic Ocean). Swordfish refuelled in Feb 1962 after cruising 112 000 miles since 1958.

PHOTOGRAPHS. A port oblique aerial view of Skate appears in the 1958-59 to 1961-62 editions. Photographs of Sargo and Swordfish appear in the 1959-60 to 1962-63 editions, and of Sea Dragon in the 1962-63 to 1965-66 editions.



SKATE

1963, Electric Boat Division, General Dynamics Corporation

Nuclear Powered Hunter-Killer Submarine (SSN)
SSN 597 TULLIBEE

Displacement, tons 2 317 surface; 2 640 submerged
Length, feet (metres) 273 (83·2)
Beam, feet (metres) 24 (7·3)
Draft, feet (metres) 21 (6·4)
Torpedo tubes 4—21 in (533 mm) amidships
Nuclear reactor Combustion Engineering type S2C water-cooled
Main engines Westinghouse turbo-electric drive
2 500 shp; 1 shaft
Speed, knots 15 on surface, 20 submerged
Complement 56 (6 officers, 50 men)

Built under the 1958 programme by Electric Boat Division, General Dynamics Corporation. Designed as an anti-submarine submarine. Speed secondary to manoeuvrability. "Albacore" type hull. Laid down on 26 May 1958, launched on 27 Apr 1960 and commissioned on 9 Nov 1960.

SONAR. Equipped with the latest scientific sonar tracking apparatus, and unique sound-proofing. The placing of the torpedo tubes amidships allows for an unprecedented number of sonar tracking transducers and hydrophones in the bow area which provide "ears" for detecting enemy submarines.



TULLIBEE

1962, courtesy Mr W. H. Davis

DESIGN. Her design is based on the shape of a whale, with a bow configuration of "tear-drop" form, and her diving planes project from the "sail" (fin-shaped conning tower).

ENGINEERING. Prototype reactor built by Reactor Division of Combustion Engineering, Windsor, Conn. The machinery comprises turbo-electric drive instead of reduction gears as in other nuclear powered submarines.

Nuclear Powered Submarine (SSN) (Ex-Guided Missile Submarine, SSGN)
SSN 587 HALIBUT

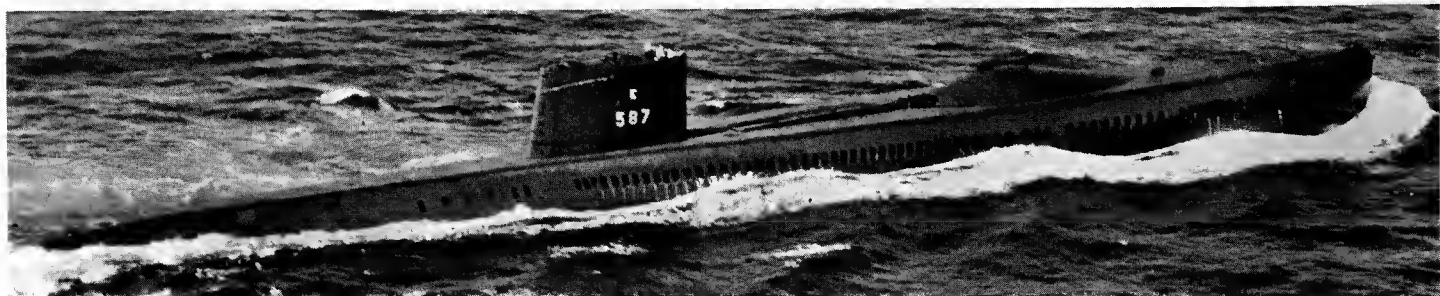
Displacement, tons 3 850 surface; 5 000 submerged
Length, feet (metres) 350 (106·7) pp
Beam, feet (metres) 29·7 (9·0)
Draft, feet (metres) 21·5 (6·6)
Torpedo tubes 4—21 in (533 mm) 2 fwd, 2 aft
Nuclear reactor 1 S3W water-cooled

Main engines 2 Westinghouse geared turbines
6 600 shp; 2 shafts
Speed, knots 15 on surface; 20 submerged
Complement 97 (9 officers, 88 men)

Provided under the 1956 programme. Originally designed as diesel powered but announced on 27 Feb 1956 she would be nuclear powered. She was fitted to handle 5 "Regulus I" sub-sonic cruise, 560 miles range missiles. The US Navy's first guided missile, nuclear powered submarine and the first designed from the keel up as a

guided missile carrier. Her hull was designed primarily to provide a stable launching platform, rather than for speed or manoeuvrability. Built by Mare Island Naval Shipyard. Laid down on 11 Apr 1957, launched on 9 Jan 1959, commissioned on 4 Jan 1960. Cost \$45 000 000. Reclassified SSN in 1965 without conversion; missile equipment removed.

PHOTOGRAPHS. A starboard bow oblique aerial view of Halibut at speed appears in the 1960-61 to 1966-67 editions.



HALIBUT

1967, Official

Submarines—continued

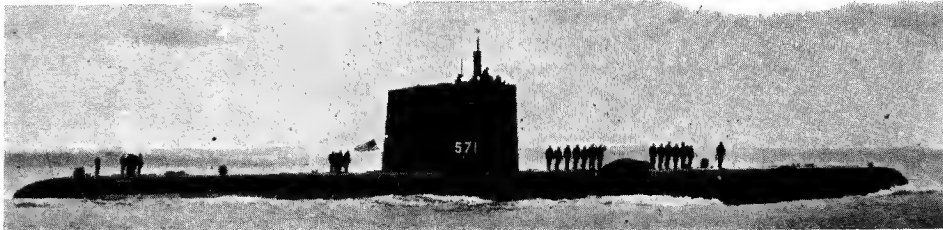
Name	No.	Builders	Laid down	Launched	Completed
NAUTILUS	SSN 571	Electric Boat Division, General Dynamics Corporation	14 June 1952	21 Jan 1954	22 Apr 1955
SEAWOLF	SSN 575	Electric Boat Division, General Dynamics Corporation	15 Sep 1953	21 July 1955	30 Mar 1957

Prototype Nuclear Powered Submarines (SSN)
2 Experimental Types

SSN 575 SEAWOLF

Displacement, tons	3 765 surface, 4 260 submerged
Length, feet (metres)	338 (103.0) oa
Beam, feet (metres)	29 (8.8)
Draft, feet (metres)	22 (6.7)
Torpedo tubes	6—21 in (533 mm) forward
Nuclear reactor	1 S2Wa water-cooled
Main engines	GE geared turbines; 15 000 shp
Speed, knots	19 on surface; 22 submerged
Radius, miles	70 000 cruising
Complement	105 (10 officers, 95 men)

Seawolf was ordered on 19 July 1952. First trials were carried out on 21 Jan 1957. Three deck levels. ENGINEERING. The original GE sodium cooled intermediate reactors were replaced by Westinghouse water-cooled reactors, similar to those installed in Nautilus. She steamed 71 609 miles in 23 months on her first, sodium-cooled, core. She underwent her reactor conversion at the Electric Boat Division General Dynamics Corporation, Groton, Conn, at a cost of \$20 000 000. Conversion work started on 13 Dec 1958, lasting 13 months. She recommissioned on 30 Sep 1960. ENDURANCE. Nautilus made the first submerged crossing of the North Pole on 3 Aug 1958. Seawolf made the record when she submerged for 60 days in the Atlantic from 6 Aug to 6 Oct 1958, cruising 15,700 miles.



NAUTILUS

1962, Wright & Logan

SSN 571 NAUTILUS

Displacement, tons	3 764 surface, 4 040 submerged
Length, feet (metres)	319.5 (97.4) pp;
Beam, feet (metres)	28 (8.5)
Draft, feet (metres)	25.5 (7.8)
Torpedo tubes	6—21 in (533 mm) forward
Nuclear reactor	1 S2W pressurised water-cooled
Main engines	Westinghouse geared turbines 15 000 shp, 2 shafts
Speed, knots	20 on surface, 23 submerged
Radius, miles	40 000
Complement	105 (10 officers, 95 men)

Nautilus commissioned on 30 Sep 1954 and carried out first trials on 17 Jan 1955. Designed to travel faster under water than on the surface. Her prow is bulbous to obtain better underwater performances compared with

conventional submarines designed for top speed on the surface and which have knife blade prows. Diving depth 700 feet. Three deck levels. The world's first nuclear powered ship. ENGINEERING. Nautilus has three engine room levels, with propulsion by nuclear, diesel, or electric power. She refuelled for the first time in 1957 after 26 months and 69 138 miles on the original core of enriched uranium. The second reactor was pulled and replaced in 1959 during routine overhaul after 26 months and steaming 93 000 miles, of which 78 885 was submerged. PHOTOGRAPHS. Aerial and surface port bow views of Nautilus appear in the 1955-56 to 1957-58 editions, and a starboard quarter oblique surface view in the 1958-59 to 1961-62 editions. A port bow surface view of Seawolf appears in the 1957-58 to 1960-61 editions. A photograph of Seawolf and Nautilus together appears in the 1957-58 to 1962-63 editions.



SEAWOLF

Guided Missile Submarines (SSG)
2 "Grayback" Class

Displacement, tons	2 240 surface, 2 935 submerged
Grayback:	2 174 surface, 3 387 submerged
Growler:	
Length, feet (metres)	Grayback 312 (95.7); Growler 317.5 (96.8)
Beam, feet (metres)	27 (8.2) 27.2 (8.3)
Draft, feet (metres)	17.5 (5.3) 17.0 (5.2)
Torpedo tubes	8—21 in (533 mm) 6 fwd, 2 aft
Main engines	2 Fairbanks Morse diesels, 5 500 hp, Elliott electric motors, 2 shafts
Speed, knots	20 on surface, 18 submerged
Complement	67 (7 officers, 60 men)

A streamlined type with a conventional engine of improved design. Grayback was built under the 1953 Fiscal Year programme and Growler under the 1955 programme. Originally intended to be attack submarines, but it was announced on 27 Feb 1956 that they would be completed as guided missile submarines.

MISSILE OPERATION. Grayback was the first submarine built expressly with guided-missile capability. Other submarines had been converted with deck-top hangars to fire "Regulus", but Grayback was the first constructed to carry and fire "Regulus" with her missile capability built in. Twin cylinder-shaped hangars, faired into the upper hull forward, contained the missiles. Immediately aft of the hangars was the launching platform from which "Regulus" was fired. The missile hangars gave a slightly different hull conformation, an improvement over the "Tang" class fast attack submarines and streamlined to assure high underwater speed. The SSG had all the usual offensive capabilities of an attack

Name	No.	Builders	Laid down	Launched	Completed
GRAYBACK	SSG 574	Mare Island Naval Shipyard	1 July 1954	2 July 1957	31 July 1958
GROWLER	SSG 577	Portsmouth Naval Shipyard	15 Feb 1955	5 Apr 1959	15 Dec 1958



GROWLER

1959, United States Navy, Official

submarine, including extensive anti-submarine warfare equipment and performance characteristics equal to the most modern non-nuclear attack submarine. She could surface at any time and automatically slide the "Regulus" missile from a cell buried in her hull into firing position. Within moments after surfacing she could fire the missile, then dive immediately.

CONVERSION. Grayback was to have been converted into a transport submarine and her missile capability removed under the FY 1965 Programme at Mare Island Naval Shipyard at a cost of \$15 200 000 to carry conventional torpedoes and transport 67 troops, but in June 1967 no work had started; project is deferred. Growler awaiting similar conversion, but is still classified SSG.



GRAYBACK

1963, United States Navy, Official

Submarines—continued

High speed Attack Submarines (SS)

Name	No.	Builders	Laid down	Launched	Completed
BARBEL	SS 580	Portsmouth Naval Shipyard	18 May 1956	19 July 1958	1 Apr 1959
BLUEBACK	SS 581	Ingalls Shipbuilding Corporation	15 Apr 1957	16 May 1959	3 June 1960
BONEFISH	SS 582	New York Shipbuilding Corp	3 June 1957	22 Nov 1958	11 July 1959

3 "Barbel" Class

Displacement, tons	2 150 surface; 2 895 submerged
Length, feet (metres)	219 (66.8) oa
Beam, feet (metres)	29 (8.8)
Draft, feet (metres)	28 (8.5) max
Torpedo tubes	6—21 in (533 mm) forward
Main engines	3 Fairbanks Morse diesels 3 100 hp; Electric drive; 1 shaft
Speed, knots	15 on surface; 25 submerged
Complement	77 (8 officers, 69 men)

Provided under the 1956 Naval Appropriations. They have the "Albacore" type hull configuration. The diving planes now extend from the "sail". These were the last conventionally powered submarines to join the United States Fleet. All subsequent submarines built in the USA are nuclear powered, except the experimental deep diving small auxiliary submarine *Dolphin*.

PHOTOGRAPHS. A photograph of *Barbel* appears in the 1959-60 to 1963-64 editions.



BLUEBACK

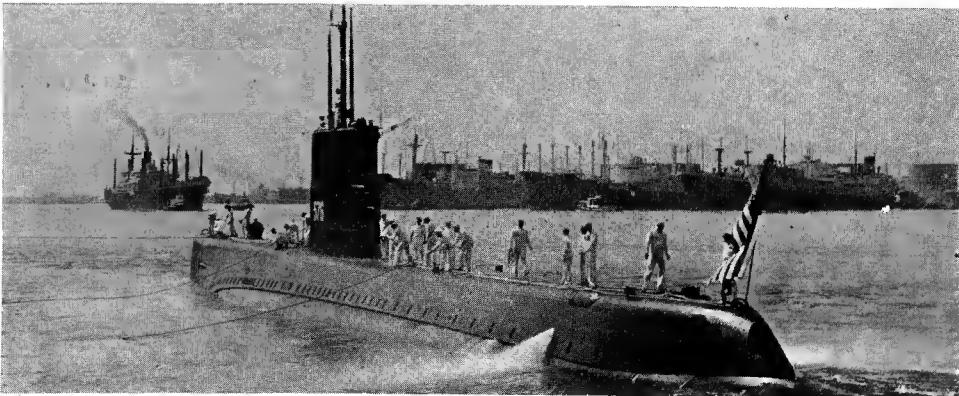
1964, United States Navy, Official

1 Improved "Tang" Class

SS 576 DARTER

Displacement, tons	1 720 surface; 2 388 submerged
Length, feet (metres)	268.6 (81.9) oa
Beam, feet (metres)	27.2 (8.3)
Draft, feet (metres)	19 (5.8)
Main engines	3 Fairbanks Morse diesels, 4 000 shp; Elliott electric motors; 1 shaft
Speed, knots	17 on surface; 25 submerged
Complement	83 (8 officers, 75 men)

Designed for significantly higher submerged speed. An exceptionally quiet submarine. Equipped with snorkel. Built by Electric Boat Division, General Dynamics Corporation. Laid down on 10 Nov 1954. Launched on 28 May 1956. Commissioned on 20 Oct 1956. A photograph appears in the 1958-59 to 1966-67 editions.



DARTER

1967, courtesy Giorgio Ghiglione

2 "Sailfish" Class (Ex-SSR)

Displacement, tons	2 625 surface; 3 168 submerged
Length, feet (metres)	350.5 (106.8) oa
Beam, feet (metres)	29.0 (8.8)
Draft, feet (metres)	18 (5.5) max
Torpedo tubes	6—21 in (533 mm) forward
	12 torpedoes carried
Main engines	4 Fairbanks Morse diesels; 8 000 shp; Elliott electric motors; 2 shafts
Speed, knots	20.5 on surface; 15 submerged
Complement	96 (11 officers, 85 men)

Ordered on 27 Feb 1952. Built as radar pickets by Portsmouth Naval Shipyard. Fitted with air control centre.

CONVERSION. In 1959 *Salmon* was modified, at the expense of some search radar, to serve as a missile guidance submarine as well as a radar picket. The deck mounted radar was removed in 1961. Both underwent FRAM II conversions in Fiscal Year 1964.

Name	No.	Builders	Laid down	Launched	Completed
SAILFISH	SS 572	Portsmouth Naval Shipyard	8 Dec 1953	7 Sep 1955	30 Sep 1956
SALMON	SS 573	Portsmouth Naval Shipyard	10 Mar 1954	25 Feb 1956	31 Dec 1956



SAILFISH

1965, United States Navy, Official

RECLASSIFICATION. Both were reclassified from Radar Picket Submarines, SSR, to SS in Mar 1961. PHOTOGRAPHS. A photograph of *Salmon* appears in the 1959-60 to 1964-65 editions.

High Speed Test Submarine (AGSS)

1 Experimental Prototype

AGSS 569 ALBACORE

Displacement, tons	1 500 surface; 1 850 submerged
Length, feet (metres)	204 (62.2) oa
Beam, feet (metres)	27.5 (8.4)
Draft, feet (metres)	18.5 (5.6)
Main engines	2 GM diesels, radial pancake type Westinghouse electric motor, 15 000 shp
Speed, knots	25 on surface; 33 submerged
Complement	52 (5 officers, 47 men)

High speed experimental submarine. Built by Portsmouth Naval Shipyard. Laid down on 15 Mar 1952. Launched on 1 Aug 1953. Completed on 5 Dec 1953. Conventionally powered submarine of radical design with new hull form which makes her faster and more manoeuvrable than any other conventional submarine. Officially described as a hydrodynamic test vehicle. Streamlined, whale-shaped without the naval flat-topped deck. Conning tower modelled on a fish's dorsal fin.

CONVERSION. Phase I (1953): cruciform stern. Phase II (1956): open stern, plastic sonar bow. Phase III (1959): improved sonar system, enlarged dorsal rudder, dive brakes on after sail section. Phase IV (1961):



ALBACORE

1962, United States Navy, Official

Electrical Drive, contra-rotating motors and 2 propellers contra-rotating about the same axis. A high capacity, long endurance silver zinc battery providing power to drive her at 33 knots submerged (commenced in Dec 1962, completed on 20 Feb 1965). Conversions were carried out at Portsmouth Naval Shipyard.

Submarines—continued

High Speed Attack Submarines (SS)

6 "Tang" Class

Displacement, tons	2 100 surface; 2 400 submerged
Length, feet (metres)	269 or 278 (82 0 or 84·7) oa
Beam, feet (metres)	27·3 (8·3)
Draft, feet (metres)	19 (6·2)
Torpedo tubes	8—21 in (533 mm) 6 fwd, 2 aft
Main engines	3 F-M diesels, 4 200 shp
	Electric motors; 3 200 shp
Speed, knots	15 or 20 on surface; 18 submerged
Oil fuel (tons)	350
Complement	83 (8 officers, 75 men)

This class embodied various improvements to give higher submerged speed, with a development of the Schnorkel. They are streamlined deep-diving vessels but have comparatively short hulls. *Trigger* was the first submarine of the post-war programme to be laid down. *Tang* was the first of the new class to be completed. The hull is shorter than previous fleet types and this reduction in length is said to contribute to the under-water speed. *Gudgeon* was the first United States submarine to circumnavigate the world during Sep 1957-Feb 1958.

ENGINEERING. *Tang*, *Trigger*, *Trout* and *Wahoo* were originally powered by a compact radial type engine produced after five years of development work, comprising a 16-cylinder 2-cycle plant, mounted vertically with four rows of cylinders radially arranged. These new engines were half the weight and two-thirds the size of the engines previously available for submarines. They proved to be unsatisfactory and were replaced by machinery similar to that in *Gudgeon* and *Harder* which have a Fairbanks-Morse high speed lightweight engine mounted horizontally. The electric motors are Elliott in *Tang* and *Trigger*, General Electric in *Wahoo* and *Trout*, Westinghouse in *Gudgeon* and *Harder*.

RECONSTRUCTION. In 1957 *Tang*, *Trigger*, *Trout* and *Wahoo* had extra 9 ft centre section added to accommodate three new Fairbanks-Morse 1 400 bhp "in-line" diesels to replace the "pancake" type. The vessels were cut in halves, the sections inserted, and welded together again. *Tang* had extra 15 ft section added in 1967.

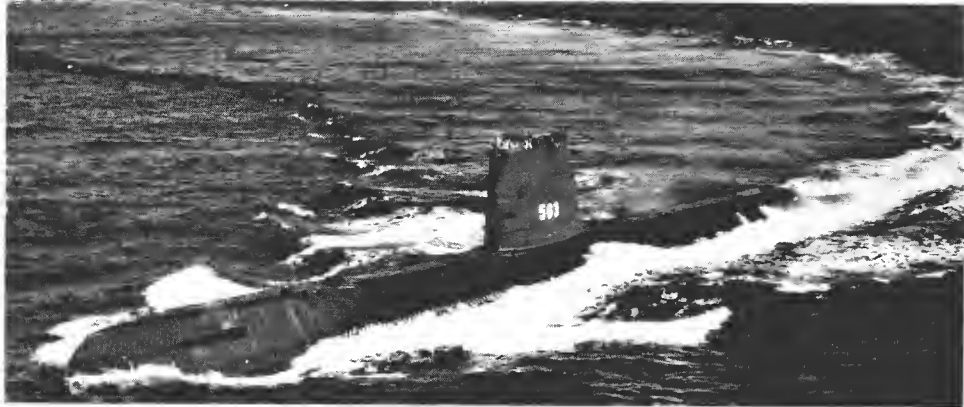
Submarines (SS)
23 "Tench" Class

4 Boston Naval Shipyard	Launched
G 522 AMBERJACK	15 Dec 1944
G 523 GRAMPUS	15 Dec 1944
G 525 GRENADIER	15 Dec 1944
FG 524 PICKEREL	15 Dec 1944
2 Cramp SB Co	
FG 425 TRUMPETFISH	19 Feb 1944
G 426 TUSK	8 July 1945
17 Portsmouth Naval Shipyard	
475 ARGONAUT	1 Oct 1944
G 478 CUTLASS	5 Nov 1944
482 IREX	26 Jan 1945
G 480 MEDREGAL AG	15 Dec 1944
G 484 ODAX	10 Apr 1945
G 486 POMODON	6 Dec 1945
G 424 QUILLBACK (ex-Trembler)	1 Oct 1944
FG 487 REMORA	7 Dec 1945
476 RUNNER AG	17 Oct 1944
G 483 SEA LEOPARD	2 Mar 1945
G 485 SIRAGO	5 May 1945
G 417 TENCH	7 July 1944
G 418 THORNBACK	7 July 1944
G 420 TIRANTE (ex-Tomate)	9 Aug 1944
423 TORSK	6 Sep 1944
G 421 TRUTTA	18 Aug 1944
FG 490 VOLADOR	17 Jan 1946

Displacement, tons	1 800 surface; 2 500 submerged
Length, feet (metres)	311·2 (94·9) oa; length varies; Guppies 306 (93·3)
Beam, feet (metres)	27·2 (8·3)
Draft, feet (metres)	17 (5·2)
Torpedo tubes	10—21 in (533 mm) 6 fwd, 4 aft
Main engines	4 diesels, 6 500 bhp
	4 electric motors, 4 610 shp
Speed, knots	20 on surface, 10 submerged
	Guppies 15
Radius, miles	14 000 at 10 knots
Oil fuel (tons)	300
Complement	82 (8 officers, 74 men)

Enlarged and improved design, able to dive to 100 fathoms. *Pickarel* made a 5 200 miles run from Hong Kong to Pearl Harbour in 21 days without surfacing in 1950. In 1952 she surfaced at a 48 degree angle from a depth of 150 feet, one of the steepest ever attempted. Both tests were made to evaluate the capabilities and design characteristics of "Guppy" type submarines. *AG Runner* was reclassified as AGSS in June 1964 and *Medregal* on 1 May 1967. *FG FRAM II/GUPPY III* conversions, which include a new 15-ft, 40-ton section with 5-ft longer "sail". *G* Units marked *G* are of the "Guppy" (Greater Under-water Propulsive Power) design equipped with the latest devices. *Argonaut*, *Irex*, *Medregal*, *Runner*, *Torsk* carry snorkels but are not Guppy conversions.

Name	No.	Builders	Laid down	Launched	Completed
GUDGEON	SS 567	Portsmouth Naval Shipyard	20 May 1950	11 June 1952	21 Nov 1952
HARDER	SS 568	Electric Boat Co, Groton	30 June 1950	3 Dec 1951	19 Aug 1952
TANG	SS 563	Portsmouth Naval Shipyard	18 Apr 1949	19 June 1951	25 Oct 1951
TRIGGER	SS 564	Electric Boat Co, Groton	24 Feb 1949	14 June 1951	31 Mar 1952
TROUT	SS 566	Electric Boat Co, Groton	1 Dec 1949	21 Aug 1951	27 June 1952
WAHOO	SS 565	Portsmouth Naval Shipyard	24 Oct 1949	16 Oct 1951	30 May 1952



TANG

1966, Direct from USS Tang, courtesy CO



GUDGEON

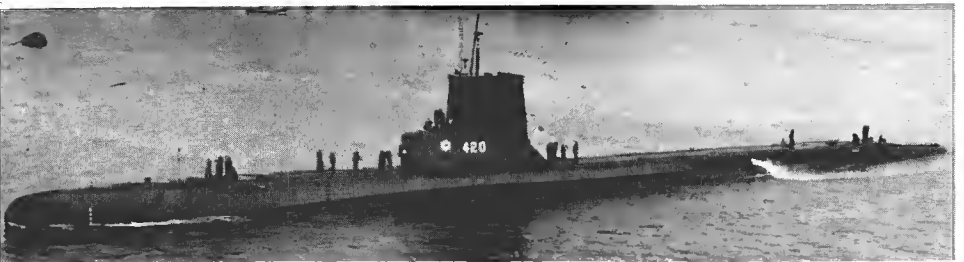
1967, United States Navy, Official

PHOTOGRAPHS. A photograph of *Trigger* appears in the 1955-56 to 1959-60 editions, of *Harder* in the 1961-62 to 1965-66 editions, of *Wahoo* in the 1960-61 to 1966-67 editions.



TRUMPETFISH

1965, Stefan Terzibaschitsch



TIRANTE

1967, A & J Pavia

PHOTOGRAPHS. Photographs of *Grenadier* and *Odax* appear in the 1957-58 to 1960-61 editions, of *Grampus* in the 1958-59 to 1962-63 editions, of *Runner* in the 1961-62 to 1964-65 editions, of *Thornback* in the 1964-65 to 1966-67 editions.

TRANSFERS. *Diablo*, AGSS 479, was loaned to Pakistan on 1 June 1964.

DISPOSALS. The partly constructed *Ulua*, SS 428, used for tests, was

scrapped in 1958. *Unicorn*, SS 436, and *Walrus*, SS 437, suspended after the Second World War, were stricken from the Navy List on 9 June 1958 and scrapped. The partly constructed *Turbot*, SS 427, was used for tests by the Navy Engineering Experimental Station, Annapolis. *Corsair*, AGSS 435, was stricken from the list in 1963. *Toro*, SS 422, was towed from Philadelphia Naval base on 14 May 1963 to be sunk off Cape Cod as a sonar target in an attempt to find the lost *Thresher*. *Conger*, SS 477, was stricken on 1 Aug 1963 and disposed of as a target. *Sarda*, AGSS 488, was stricken on 1 June 1964 and sold.

Submarines—continued

59 "Balao" Class (SS and AGSS)

7 Cramp SB Co		
T 297 LING AG	18 Aug 1943	
T 298 LIONFISH AG	7 Nov 1943	
T 299 MANTA AG	7 Nov 1943	
300 MORAY AG	14 May 1944	
T 301 RONCADOR AG	14 May 1944	
302 SABALO	4 June 1944	
303 SABLEFISH	4 June 1944	

25 Electric Boat Co		
311 ARCHERFISH AG	29 May 1943	
T 310 BATFISH (ex-Acoupa), AG	3 May 1943	
319 BECUNA	30 Jan 1944	
G 322 BLACKFISH	12 Mar 1944	
G 324 BLENNY	9 Apr 1944	
331 BUGARA	2 July 1944	
G 334 CABEZON T AG	27 Aug 1944	
G 323 CAIMAN (ex-Blanquillo)	30 Mar 1944	
337 CARBONERO	15 Oct 1944	
338 CARP	12 Nov 1944	
G 339 CATFISH	19 Nov 1944	
328 CHARR AG (ex-Bocaccio)	28 May 1944	
G 341 CHIVO	14 Jan 1945	
G 342 CHOPPER	14 Feb 1945	
FG 343 CLAMAGORE	23 Feb 1945	
FG 344 COBBLER	1 Apr 1945	
FG 346 CORPORAL	10 June 1945	
G 347 CUBERA	17 June 1945	
388 CUSK	28 July 1945	
T 335 DENTUDA AG (ex-Capitol)	10 Sep 1944	
G 349 DIODON	10 Sep 1945	
G 350 DOGFISH	27 Oct 1945	
G 340 ENTEMEDOR (ex-Chicwick)	17 Dec 1944	
FG 351 GREENFISH (ex-Doncelle)	21 Dec 1945	
G 352 HALFBEAK (ex-Dory)	19 Feb 1946	

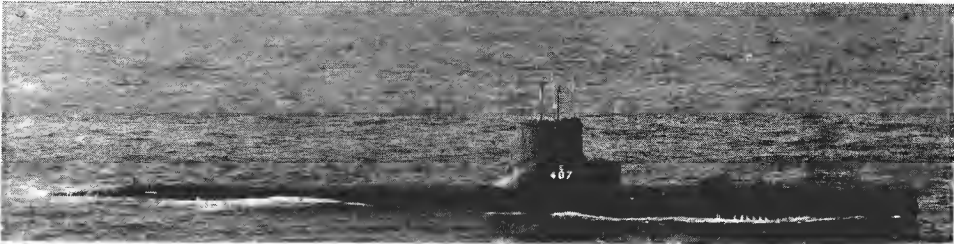
3 Manitowoc SB Co		
G 365 HARDHEAD	12 Dec 1943	
G 368 JALLAO	12 Mar 1944	
G 377 MENHEDEN	20 Dec 1944	

1 Mare Island Navy Yard		
FG 416 TIRU	16 Sep 1947	

23 Portsmouth Navy Yard		
403 ATULE	6 Mar 1944	
G 385 BANG	30 Aug 1943	
T 286 BILLFISH AG	13 Nov 1942	
T 287 BOWFIN AG	7 Dec 1943	
T 288 CABRILLA AG	24 Feb 1942	
T 291 CREVALLE AG	22 Feb 1943	
T 383 PAMPANITO AG	12 July 1943	
T 384 PARCHE AG	24 July 1943	
382 PICUDA (Obispo)	12 July 1943	
T 409 PIPER (ex-Awa)	26 June 1944	
G 391 POMFRET	27 Oct 1943	
394 RAZORBACK	27 Jan 1944	
G 396 RONQUIL	27 Jan 1944	
399 SEA CAT	21 Feb 1944	
T 401 SEA DOG AG	28 Mar 1944	
G 402 SEA FOX	28 Mar 1944	
405 SEA OWL SSK	7 May 1944	
G 406 SEA POACHER	20 May 1944	
407 SEA ROBIN	25 May 1944	
398 SEGUNDO	5 Feb 1944	
408 SENNET	6 June 1944	
392 STERLET (ex-Pudieno)	27 Oct 1943	
G 410 THREADFIN (ex-Sole)	26 June 1944	

Displacement, tons	1 816 surface; 2 425 submerged
Length, feet (metres)	311.5 (95.0)
	Guppy conversion 309 (94.4) aa
	FG conversion 326.5 (99.5) aa
	but length varies, see FG notes
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	17 (5.2)
Torpedo tubes	10—21 in (533 mm) 6 bow, 4 stern; 24 torpedoes carried
Main engines	4 GM or F-M diesels, 6 500 bhp electric motors, 4 610 to 5 500 shp
Speed, knots	20 on surface; 10 to 17.5 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	80 (8 officers, 72 men)

To facilitate rapid building, all were of the same general type as the "Gato" class, and of all-welded construction. Average time of construction during the war was reduced to nine months. High standard of accommodation, including separate messing and sleeping compartments.



SEA ROBIN

1966, Skyfotos



SEA POACHER

1966, Dr Giorgio Arra



SEA CAT

1967, A. & J. Pavia

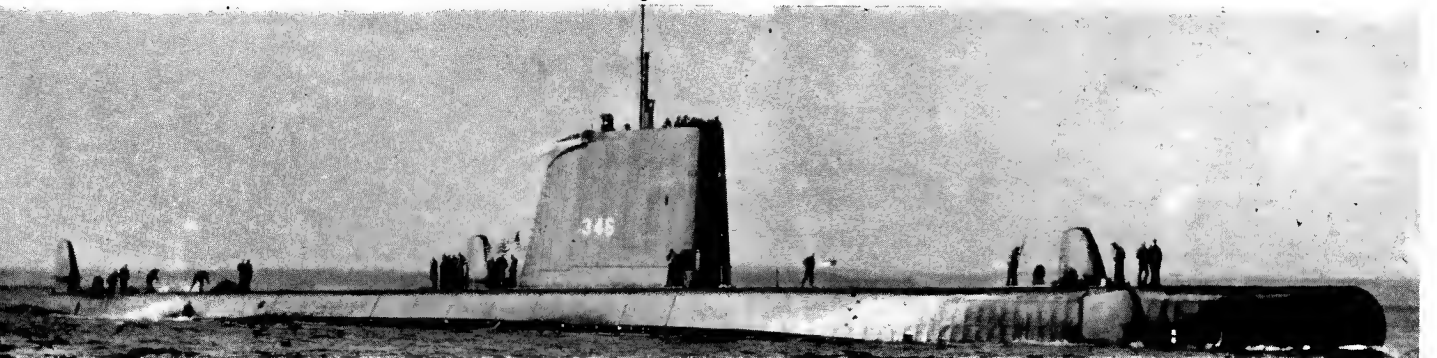
G are units converted into "Guppies". T are training units with torpedo tubes welded shut and propellers removed. AG indicates units reclassified as AGSS, 23 of this class were reclassified from SS to AGSS on 1 Dec 1962. The reclassification of Cusk to AGSS was cancelled. Charr was reclassified from SS to AGSS on 1 July 1966. Carbonero and Cusk converted to SSG, were subsequently reclassified as SS. Barbero was equipped to carry cargo and reclassified ASSA, but was subsequently converted to a guided missile submarine SSG. Bugara, Carbonero, Carp, Charr, Cusk, Piper, Sabalo, Sea Cat, Sea Owl, Segundo, Sennet, Sterlet have snorkels and are Fleet "Guppies". Sea Poacher has a bow similar to that of SSK but is not fitted as SSK. Archerfish is fitted for hydrographic work and is demilitarised. Piper transferred to training in 1967.

FG FRAM II/GUPPY III Conversions. During her FRAM overhaul Tiru had an additional 12-ft section added and the conning tower was extended by 5 ft to provide for an attack centre. Fitted with non-corrodible laminated glass plastic "sail" (conning tower) and superstructure. The overhaul included increased fuel capacity, extra berthing accommodation, advanced electric systems, greater communication capabilities, and the ability to fire new advanced weapons. Tiru was the first submarine to undergo FRAM, (at Pearl Harbour Naval Shipyard). FRAM conversion adds 15 feet to the length and 55 tons to the displacement. Sealion and Perch were fitted to carry troops. Burrfish was modified for radar picket duties. Guavina was converted to oiler. Baya was equipped for electronic experiments (see later pages).

LOSSES. Cochino sank off northern Norway on 26 Aug 1949, Stickleback sank off Pearl Harbour, after ramming by destroyer escort Silverstein on 29 May 1959. War Losses: Barbel, Bullhead, Capelin, Cisco, Escolar, Golet, Kete, Lagarto, Shark, Tang, 16 cancelled: Dugong, Eel, Espada, Garloppa, Geuppe, Goldring, Jawfish, Needlefish (379), Nerka, Ono, Turbot, Uluu, Vandance (431), Whitefish, Whiting, Wolffish. Apogan, Pilotfish and Skate were scrapped after being employed as atom bomb targets at Bikini 1946.

PHOTOGRAPHS. Photographs of Carbonero (guided missile on catapult), Cusk (equipped for guided missiles), Redfish and Sea Owl appear in the 1957-58 edition, of Clamagore in the 1957-58 to 1959-60 and 1963-64 to 1966-67 editions, of Piper in the 1957-58 to 1960-61 editions, of Sea Poacher in the 1958-59 to 1960-61 editions, of Cusk in the 1959-60, 1961-62 editions, of Carbonera (after conversion from SSG to SS) in the 1960-61 to 1962-63 editions, of Tiru in the 1961-62 to 1964-65 editions, of Halfbeak in the 1961-62 to 1965-66 editions, of Ronquil in the 1962-63 to 1965-66 editions. TRANSFERS. Blower, SS 325, Blueback, SS 326, Boarfish, SS 327, Chub, SS 329, Brill, SS 330, Bumper, SS 333, to Turkey, and Hawksbill and Icefish to Netherlands in 1953, on loan for five years, Bergall, SS 320, to Turkey in 1958, and Mapiro, SS 376, and Mero, SS 378 to Turkey in 1960, Lizardfish, SS 373, to Italy in Jan 1960, Kraken, SS 370 to Spain in Oct 1959, Tilefish, SS 307, to Venezuela in 1960, Lamprey, SS 372, to Argentina on 21 July 1960, and Macabi, SS 375, to Argentina, Springer, SS 414 to Chile on 23 Jan 1961, Burrfish, SSR 312, reclassified SS in Mar 1961, to Canada on 11 May 1961, on loan for five years, Sprat, SS 413, to Chile on 12 Jan 1962, on loan for five years. Plaice, SS 390, and Sand Lance, SS 381, to Brazil in Aug 1963 Scabbardfish, SS 397, to Greece on 26 Feb 1965, Besugo, SS 321, and Capitaine, SS 326, to Italy on 5 Mar 1966.

DISPOSALS. Lancefish, suspended at end of Second World War, was stricken on 9 June 1958 and scrapped. Dragonet, SS 293, was stricken in 1961 and expended as a target. Aspro, AGSS 309 was stricken in Sep 1962. Queenfish, AGSS 393, was stricken on 1 Mar 1963 and disposed of as a target, and Spikefish, SS 404, was stricken on 1 May 1963 and expended as target on 4 Aug 1964. Balao, AGSS 285, was stricken in Sep 1963, Sea Devil, AGSS 400 on 1 Apr 1964, Devilfish, AGSS 292, Hackleback, AGSS 295, Seahorse, AGSS 304, Pintado, AGSS 387, Pipefish, AGSS 388, and Piranha, AGSS 389, in 1967 (the names Pintado, Seahorse, and Spadefish were reassigned to SSN 672, 669 and 668 in 1966). Loggerhead, AGSS 374, Redfish, AGSS 395, and Trepang AGSS 412, to be stricken in 1967.



CORPORAL

1965, Wright & Logan

Ex-Radar Picket Submarines

3 Converted "Tench" Class

Name	No.	Builders	Launched
REQUIN	SS 481	Portsmouth	1 Jan 1945
SPINAX	SS 489	Naval	20 Nov 1945
TIGRONE	AGSS 419	Shipyard	20 July 1944

Displacement, tons	1 800 surface; 2 500 submerged
Length, feet (metres)	312 (95.1) oa
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	17 (5.2)
Torpedo tubes	6—21 in (533 mm) forward
Main engines	Diesels; 6 500 bhp
	Electric motors; 2 750 hp
Speed, knots	20 on surface; 10 submerged
Radius, miles	14 000 at 10 knots
Oil fuel (tons)	300
Complement	80

Spinax was laid down on 14 May 1945. Tigrone was completed on 21 Feb 1949. Units vary in detail. Guns

4 Converted "Gato" Class

Displacement, tons	1 800 surface; 2 500 submerged
Length, feet (metres)	343 (104.5)
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	17 (5.2)
Main engines	GM 2-stroke diesels; 6 500 hp
	Electric motors; 2 750 hp
Speed, knots	21 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	85

Before conversion into Radar Picket Submarines, SSR, these were conventional submarines of the "Gato" class, see later page. They were cut in two to permit the installation of new electronic equipment. Two new mid-sections lengthened them by 31 feet from their original 311.8 feet and increased their displacement from their original 1 525 tons. Redfin re-commissioned 9 Jan 1953, Rock 12 Oct 1953. Redfin was reclassified from SSR to SS in 1959 and to AGSS in June 1963, and Rasher, Raton, and Rock to AGSS in 1960. Rasher and Redfin were assigned to Naval Reserve training in 1967.

MODIFICATION. Raton was modified in 1967 to carry a small deep-submergence rescue vessel.

PHOTOGRAPHS. A starboard bow oblique aerial view of Redfin at speed appears in the 1961-62 to 1966-67 editions.

Experimental Submarine (AGSS)

1 Converted "Balao" Class

Displacement, tons	1 900 surface; 2 625 submerged
Length, feet (metres)	334.8 (102.0) oa
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	17 (5.2)
Torpedo tubes	4 aft
Main engines	Diesels, 4 800 hp
	Electric motors, 2 750 hp
Speed, knots	10.5 surface; 8 submerged
Complement	76 (8 officers, 68 men)

RECONSTRUCTION. In 1958-59 Baya was converted to a laboratory submarine for electronic experiments. She was cut in two at the San Francisco Naval Shipyard and a 23-ft section inserted amidships between the forward torpedo room and the forward battery room. She was fitted with a bigger and blunter bow to house electronic gear, two booms to act as sonar antennae when extended, a mushroom anchor in the bottom of the submarine in a recess built into the hull, living quarters for 12 research laboratory scientists, and a

Target and Training Submarines

2 "T" Class (SST)

Displacement, tons	303 surface; 347 submerged
Length, feet (metres)	131.2 (40.0) oa
Beam, feet (metres)	13.5 (4.1)
Draft, feet (metres)	12.2 (3.7)
Torpedo tubes	1 forward
Main engines	2 GM diesels; 1 shaft
	1 electric motor; 380 hp
Speed, knots	8 surface; 9.5 submerged
Radius, miles	2 000 at 8 knots
Oil fuel (tons)	18
Complement	18 (2 officers, 16 men)

Marlin was ordered on 17 Mar 1951. Smallest submarine built for 47 years. Mackerel was ordered on 5 Jan 1952. Classification SST and former name T1 superseded AGSS 570, originally assigned to Mackerel. For training surface and air anti-submarine forces. Renamed in 1956. Cost \$3 000 000 each.



SPINAX

1965, United States Navy, Official

were removed. In 1959 Requin and Spinax had their big radar antennae, complicated conning tower and air-control centre removed and they were fitted with a streamlined conning tower. All three were reclassified from SSR to SS on 15 Aug 1959. Tigrone was reclassified as AGSS on 1 Dec 1963.

PHOTOGRAPHS. Of Tigrone in 1952-53 to 1957-58 editions, of Requin in the 1953-54 to 1961-62 editions.

TRANSFER. Burrfish, SSR 312, reclassified as SS in Mar 1961, was transferred to the Royal Canadian Navy on 11 May 1961, on loan, and renamed Grilse.

Name	No.	Builders	Laid down	Launched	Completed
T RASHER	AGSS 269	Manitowoc Shipbuilding Co	4 May 1942	20 Dec 1942	8 June 1943
T RATON	AGSS 270	Manitowoc Shipbuilding Co	29 May 1942	24 Jan 1943	13 July 1943
T REDFIN	AGSS 272	Manitowoc Shipbuilding Co	3 Sep 1942	4 Apr 1943	31 Aug 1943
ROCK	AGSS 274	Manitowoc Shipbuilding Co	23 Dec 1942	20 June 1943	26 Oct 1943



RATON

1967, United States Navy, Official

Name	No.	Builders	Laid down	Launched	Completed
BAYA	AGSS 318	Electric Boat Division, Groton	9 Apr 1943	2 Jan 1944	20 May 1945

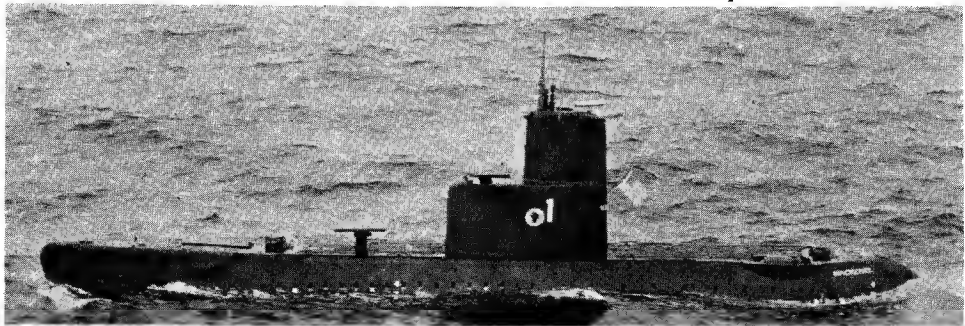


BAYA (round prow pushes water away at high speeds)

1960, courtesy "Our Navy"

LORAD anti-submarine detection system (long range) evaluation force. (Target submarine Manta assigned to training 1967). In 1960 she was assigned to the operational test and

Name	No.	Builders	Laid down	Launched	Completed
MACKEREL	SST 1 (ex-T 1)	Electric Boat Co, Groton	12 May 1952	14 Oct 1953	28 Nov 1953
MARLIN	SST 2 (ex-T 2)	Portsmouth Naval Shipyard	1 Apr 1952	17 July 1953	9 Oct 1953



MACKEREL

1967

PHOTOGRAPHS. A starboard dead broadside surface view of Marlin in the 1965-66 and 1966-67 editions.

Submarines—continued

Ex-Guided Missile Submarine

1 Converted "Gato" Class

Displacement, tons	1 816 surface; 2 425 submerged
Length, feet (metres)	311.8 (95.0)
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	17 (5.2)
Main engines	Diesels, 6 500 hp Electric motors, 2 750 hp
Speed, knots	21 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	81 (9 officers, 72 men)

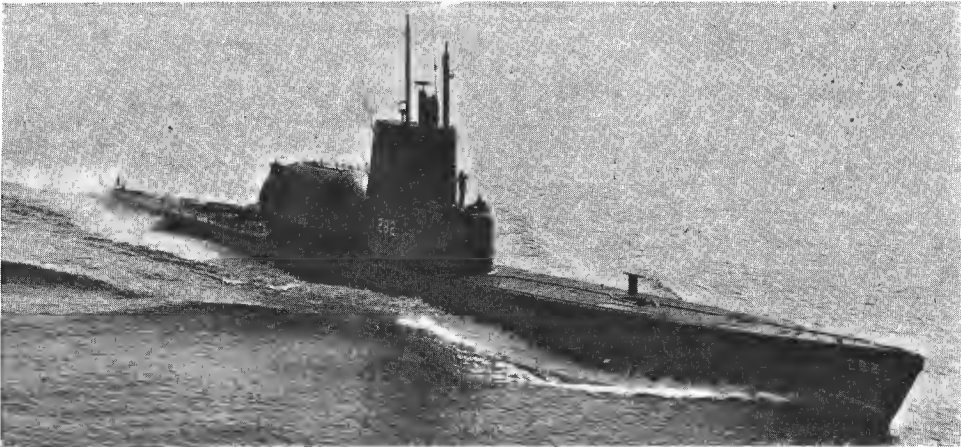
Converted by Mare Island Naval Shipyard. Modified at Pearl Harbour Naval Shipyard to handle the now cancelled "Regulus II" guided missile. Reclassified as SS on 15 May 1966 and APSS on 10 Oct 1966.

GUIDED MISSILES. Was equipped with "Regulus I" missiles 32.5 feet long, and guidance equipment.

PHOTOGRAPHS. A starboard broadside view of *Tunny* with "Regulus I" surface-to-surface guided missile in launching position appears in the 1959-60 to 1966-67 editions.

DISPOSAL. The converted "Balao" class guided missile submarine *Barbero*, SSG 317 (ex-ASSA, ex-SS) was stricken from the Navy List on 1 July 1964 and expended as a target.

Name	No.	Builders	Laid down	Launched	Completed
TUNNY	APSS (ex-SSG) 282	Mare Island Naval Shipyard	10 Nov 1941	1 July 1942	1 Sep 1942



TUNNY

1967

Amphibious Troop Carriers (APSS)

2 Converted "Balao" Class

Displacement, tons	2 145 surface; 2 500 submerged
Length, feet (metres)	311.5 (95.0)
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	17 (5.2)
Guns, AA	2-40 mm
Main engines	2 GM diesels, 2 305 hp; Electric motors (2 of original 4 diesels removed for additional accommodation for troops)
Speed, knots	13 on surface
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	74 (6 officers, 68 men)
Accommodation	184 (14 officers, 170 men)

Perch was converted at Mare Island Shipyard in 1948, and *Sealion* at San Francisco Naval Shipyard, to carry 160 troops each. Both vessels were formerly fleet submarines of the "Balao" class, see earlier page. Now classed as "Amphibious Vessels Submarine Transport". (Can carry 80 Marines, Commandos or Frogmen). Conversion of *Sealion* was completed 15 Dec 1948. Torpedo tubes removed. In 1960 *Perch* was decommissioned and *Sealion* was assigned to Naval Reserve training. Both recommissioned in Oct and Nov 1961. *Perch* was transferred to Naval Reserve Training in 1967.

PHOTOGRAPHS. A photograph of *Perch*, showing amphibious hangar, appears in the 1949-50 to 1959-60 editions, and of *Sealion* in the 1957-58 to 1964-65 editions.

APPEARANCE. The hull bulges out prominently abaft the conning tower.

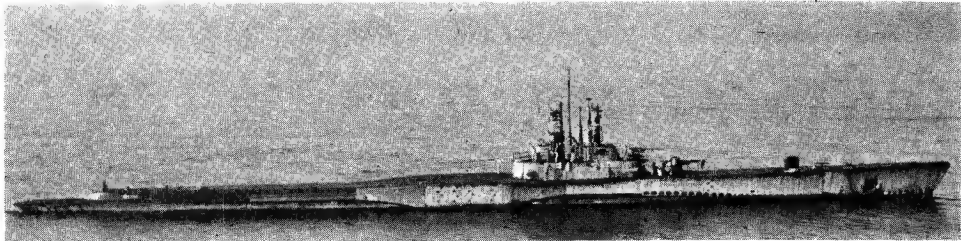
DISPOSALS. The converted "Balao" class refuelling submarine *Guavina*, AOSS, ex-AGSS, ex-SSO 362, is to be stricken from the Navy List in 1967. See full particulars in the 1966-67 and earlier editions. The converted "Gato" class experimental submarine *Flying Fish*, AGSS 229, was scrapped in 1959.

Name	No.	Builders	Laid down	Launched	Completed
T PERCH	APSS 313	Electric Boat Div, Groton	5 Jan 1943	12 Sep 1943	7 Jan 1944
SEALION	APSS 315	Electric Boat Div, Groton	25 Feb 1943	31 Oct 1943	8 Mar 1944



PERCH

1965, United States Navy, Official



SEALION

Official

Experimental Deep-Diving Submarines

1 New Construction

Displacement, tons	600 surface; 930 submerged
Length, feet (metres)	152 (46.3)
Beam, feet (metres)	18 (5.5)
Draft, feet (metres)	16 (4.9) max
Torpedo tubes	1-21 in (533 mm) bow
Main engines	Diesel-electric, battery systems; 1 shaft; 1 650 shp
Speed, knots	12 submerged
Complement	22 (3 officers, 15 men, 4 scientists)
Cost	\$37 million

Name	No.	Builders	Laid down	Launched
DOLPHIN	AGSS 555	Portsmouth Naval Shipyard	9 Nov 1962	20 Mar 1965

Auxiliary experimental deep-diving submarine with single screw, diesel-electric, battery systems, for special non-nuclear experimental purposes. Authorised under the 1961 programme. Constant diameter pressure hull closed with hemispheres. Superstructure, rudder, fair-water constructed of glass reinforced plastics. HY-80 steel hull permits 2 000 feet operational depth. To be completed in Dec 1967 (revised schedule).

NEW CONSTRUCTION. NR 1. Test Vehicle. Deep-diving (600 feet) nuclear powered research submarine.

Designed and being built by Electric Boat, General Dynamics. HY-80 steel hull. Portholes for viewing, camera, recovery apparatus, two external pods with thruster motors to move bow and stern, carrying 1 water-cooler reactor, crew of 5 plus 2 observers. 6 Submarine Rescue Vehicles. First building by Lockheed Missile & Space Co. Air transportable. Have been redesigned to double original carrying capacity of 12, to 24, survivors per trip from sunken submarine. 30 tons displacement, 49 feet, 2 crew, 5 knots, 3 500 ft limit, 12 hours endurance at 3 knots.

Submarines—continued

Ex-Submarine Hunter Killers

7 Converted "Gato" Class
(AGSS, ex-SS, ex-SSK)

Displacement, tons	1 816 surface; 2 425 submerged
Length, feet (metres)	311.2 (94.9)
Beam, feet (metres)	27 (8.2)
Draft, feet (metres)	15 (4.6)
Main engines	3 diesels; 4 800 bhp; Electric motors, 3 450 hp
Speed, knots	17 on surface; 10 submerged
Radius, miles	10 000 at 10 knots
Oil fuel (tons)	300
Complement	86

Grouper was converted and redesignated SSK (Large) in 1950, and the remainder in 1951-53. *Angler* made her 10 000th dive on 9 Nov 1965.

RECLASSIFICATION. *Grouper* was again reclassified from SSK to AGSS on 21 June 1958 to carry out experiments for the Underwater Sound Laboratory. Other six were reclassified from SSK to SS on 15 Aug 1959. *Bashaw* was reclassified AGSS on 1 Sep 1962, *Angler* and *Cavalla* in 1963, *Bream* on 15 Apr 1965, *Bluegill* Apr 1966 (training 1967), *Croaker* 1 May 1967.

PHOTOGRAPHS. A photograph of *Grouper* appears in the 1962-63 to 1966-67 editions.

EXPERIMENTAL. *Grouper* underwent a seven month overhaul in 1960 which radically altered her appearance. Several new research sonar devices installed for determining underwater sound characteristics in various parts of the world's oceans. Bow fitted with special large transducers; forward torpedo room converted into a laboratory with test equipment; facilities include berthing for scientists, sonar room. Hydrophones provide for a total of 261 transducers for research for purposes.

Submarines (AGSS, ex-SS)

5 Training "Gato" Class

Displacement, tons	1 816 surface; 2 425 submerged
Dimensions, feet	311.8 x 27 x 15
Main engines	GM 2-stroke diesels; 6 500 bhp = 21 knots (surface) Electric motors; 2 750 hp = 10 knots (submerged)
Oil fuel, tons	300
Radius, miles	10 000 at 10 knots
Complement	85

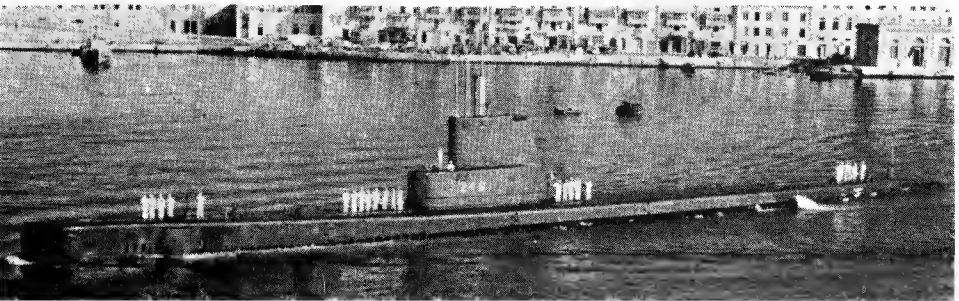
Ordered under the 1939-41 Programmes. Have two engine rooms instead of one as in previous submarines to reduce size of compartments. War losses: *Albacore*, *Amberjack*, *Bonfish*, *Corvina*, *Darter*, *Dorada*, *Flier*, *Growler*, *Grunion*, *Harder*, *Herring*, *Robalo*, *Runner*, *Scamp*, *Scorpion*, *Snook*, *Trigger*, *Tullibee*, *Wahoo*. All the remaining boats of this class were assigned to training duties with Naval Reserve units, their torpedo tubes (10—21 inch, 6 bow and 4 stern) welded shut and their propellers removed.

PHOTOGRAPHS. A photograph of *Hake* at sea appears in the 1944-45 to 1964-65 editions, and of *Silversides* in the 1955-56 to 1964-65 editions.

RECLASSIFICATION. All the remaining units of this class were reclassified from SS to AGSS on 1 Dec 1962.

TRANSFERS. *Barb*, SS 220, and *Dace*, SS 247, were transferred to Italy in 1954, *Guittaro*, SS 363, and *Hammerhead*, SS 364, to Turkey (loans extended for five years in 1959). *Mingo*, SS 261, to Japan in Aug 1955 on loan for five years. *Muskallunge*, SS 262, and *Paddle* SS 263, were loaned to Brazil in Jan 1957, *Jack*, SS 259, and *Lapon*, SS 260 to Greece in 1957 (*Jack* transferred on 21 Apr 1958, *Lapon* on 8 Aug 1957).

Name	No.	Builders	Laid down	Launched	Completed
ANGLER	AGSS 240		9 Nov 1942	4 July 1943	1 Oct 1943
BASHAW	AGSS 241	All built by	4 Dec 1942	25 July 1943	25 Oct 1943
BLUEGILL	AGSS 242	Electric Boat	17 Dec 1942	8 Aug 1943	11 Nov 1943
BREAM	AGSS 243	Company,	5 Feb 1943	17 Oct 1943	24 Jan 1944
CAVALLA	AGSS 244	Groton,	4 Mar 1943	14 Nov 1943	29 Feb 1944
CROAKER	AGSS 246	Connecticut	1 Apr 1943	19 Dec 1943	21 Apr 1944
GROUPE	AGSS 214		28 Dec 1940	27 Oct 1941	12 Feb 1942



CROAKER 1965, A. & J. Pavia



BLUEGILL Added 1967, Official

Name	No.	Builders	Laid down	Launched	Completed
CERO	AGSS 225	Electric Boat Co, Groton	21 July 1942	21 Mar 1943	21 June 1943
COBIA	AGSS 245	Electric Boat Co, Groton	24 Aug 1942	4 Apr 1943	3 July 1943
COD	AGSS 224	Electric Boat Co, Groton	11 Sep 1940	12 May 1941	23 Dec 1941
HAK	AGSS 256	Electric Boat Co, Groton	17 Mar 1943	28 Nov 1943	28 Mar 1944
SILVERSIDES	AGSS 236	Mare Island Navy Yard	1 Nov 1941	17 July 1942	30 Oct 1942



HAK 1964, courtesy Dr Ian S. Pearsall

DISPOSALS. *Blackfish*, SS 221, *Finback*, SS 230, *Gunnel*, SS 253, *Haddock*, SS 255, *Pogy*, SS 266, and *Tinosa*, SS 283, were stricken from the Navy List early in 1959. *Bluefish*, SS 222, *Flasher*, SS 249, *Flounder*, SS 251, and *Gabilan*, SS 252, late in 1959, *Gato*, SS 212, *Greenling*, SS 213, *Guardfish*, SS 217, *Haddock*, SS 231, *Kingfish*, SS 234, *Shad*, SS 235, *Whale*, SS 239, *Gurnard*, SS 254, *Hoe*, SS 258, *Pargo*, SS 264, *Puffer*, SS 268, *Sawfish*, SS 276, *Steelhead*, SS 280, and *Sunfish*, SS 281, in 1960. *Peta*, SS 265, was sold in Nov 1960. The hulk of *Tinosa*, SS 283, was employed for training in submarine salvage operations in the Hawaiian Islands. *Gurnard*, SS 254, was disposed of in 1961, and *Guardfish*, SS 217, was expended as a target in 1961. *Drum*, AGSS 228, will be deleted from the list in 1967, and *Hake*, AGSS 256, in the near future.

X 1

Displacement, tons	31 surface; 36 submerged
Length, feet (metres)	49.2 (15.0)
Beam, feet (metres)	7.0 (2.1)
Draft, feet (metres)	7.0 (2.1)
Main engines	Diesels, 30 shp; electric motors
Speed, knots	15 (max surface); 12 submerged
Radius, miles	over 500
Complement	8 (2 officers, 6 men) maximum 4 minimum underway crew

Built in 1954-55. In Feb 1958 an internal explosion severed her hull into three pieces, but she was rebuilt by Philadelphia Naval Shipyard, and rejoined the Navy on 14 Dec 1960 for special tests and development. Painted orange, serving at Naval Ship Research and Development Centre, Annapolis Md.



X 1 1962, United States Navy, Official

Ex-Submarine Hunter Killer

1 "Barracuda" Class

Displacement, tons	765 surface; 1 160 submerged
Length, feet (metres)	196 (59.7) oa
Beam, feet (metres)	24.8 (7.5)
Draft, feet (metres)	16 (4.9)
Torpedo tubes	1—21 in (533 mm) forward
Main engines	3 GM diesels, GE electric motors 1 050 shp; 2 shafts
Speed, knots	10 surface; 8 submerged
Complement	50 (5 officers, 45 men)

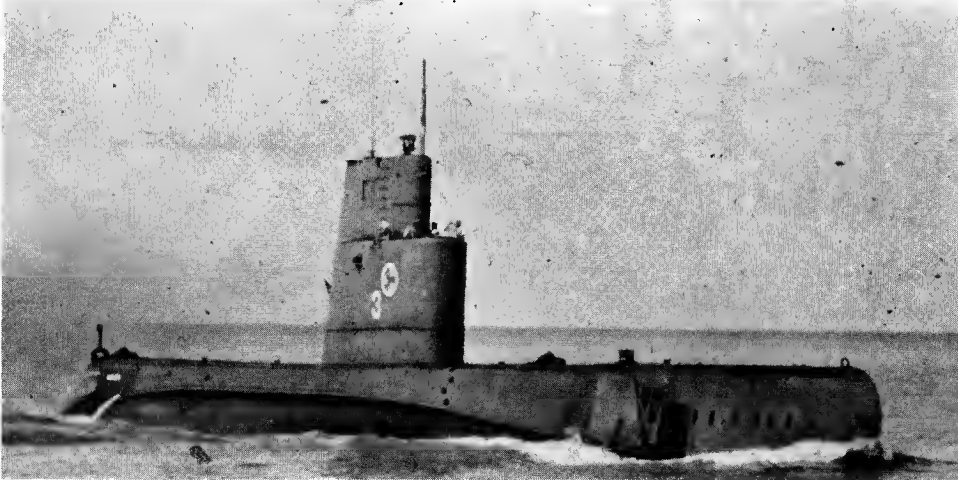
Medium sized, quiet, and handy design specifically built for anti-submarine operations. Had letter and number instead of name until 15 Dec 1955 when "B" name was substituted for "K" number. Originally had an ungainly prow housing listening gear, electronic and sonar detection equipment, short hull, to make her manoeuvrable and suitable for ambushing other submarines. Carried homing torpedoes. By 1959 this class was considered to be wanting as hunter killer craft. They lacked speed, range and endurance.

PHOTOGRAPHS. A photograph of *Bonita* appears in the 1954-55 to 1961-62 editions, photographs of *Barracuda* with high prow in the 1963-64 edition, a broadside view of *Bass* in the 1962-63 and 1963-64 editions, and a starboard quarter oblique aerial view of *Bass* in the 1964-65 and 1965-66 editions.

DISPOSALS
Sister boats *Bass*, SS 551 (ex-K 2) and *Bonita*, SS 552 (ex-K 3) were officially stricken from the Navy List on 1 Apr 1965.

Submarines—continued

Name	No	Builders	Laid down	Launched	Completed
BARRACUDA	SST 3 (ex-K 1)	Electric Boat Co, Groton	1 July 1949	2 Mar 1951	10 Nov 1951



BARRACUDA

1966

EXPERIMENTAL. *Bonita* was used as a test ship in the 1958 Atomic Weapons Tests from which only superficial damage was sustained.

RECLASSIFICATION. In 1959 the Nos. were changed: *Barracuda* from SSK 1 to SST 3; and *Bass* and *Bonita* from SSK 2 and SSK 3 to SS 551 and SS 552, respectively.

2 New Construction

AGC 19 BLUE RIDGE	AGC 20
Displacement, tons	19 000
Dimensions, feet	620 × 82 × 27 max
Guns	4—3 in (2 twin), 50 cal
Main engines	Turbine, 22 000 shp
Speed, knots	20
Complement	Accommodation for 1 439 (269 officers, 1 170 men).

The flagship authorised in the Fiscal Year 1965 New Construction Programme combines a complex communications system, planning facilities and tactical control areas into one well integrated unit, and provides the facilities for full support for the major commanders involved in the planning and execution of an amphibious assault landing. She is the first Flagship of post Second World War design. Building by Philadelphia Naval Shipyard. Keel laid 27 Feb 1967 for delivery in Nov 1968. AGC 20, in the 1966 Programme, is being built by Newport News Shipbuilding & Dry Dock Co at a cost of \$36 000 000.

5 "Mount McKinley" Class
Amphibious Force Flagships

AGC	Launched
11 ELDORADO (ex-Monsoon)	26 Oct 1943
12 ESTES (ex-Morning Star)	1 Nov 1943
7 MOUNT MCKINLEY (ex-Cyclone)	27 Sep 1943
16 POCONO	25 Jan 1945
17 TACONIC	10 Feb 1945

Displacement, tons	7 510 light; 12 560 full load
Length, feet (metres)	435 (132.6) wl; 495.2 (140.0) oa
Beam, feet (metres)	63.0 (19.2)
Draft, feet (metres)	28.2 (8.6)
Guns, dual purpose	1—5 in (127 mm) 38 cal.
Guns, AA	4—40 mm, 2 twin
Boilers	2 Combustion engineering
Main engines	Geared turbines; 6 000 shp
Speed, knots	15
Complement	517 (36 officers, 486 men)

C2-S-A1 type, but differ. Radar and radio equipment is exceptionally elaborate. Twin 40 mm guns on extended stern instead of 5 inch, 38 cal, as formerly. Helicopter platform laid over the quarter deck. *Pocono* and *Taconic* have single mast instead of after king-post (see photograph).

FLAGSHIP CAPABILITY. Originally designated as Combined Operations Communications Headquarters Ships. these vessels are fitted as flagships for Chiefs of Combined Forces, with accommodation for Marine and Army units attached.

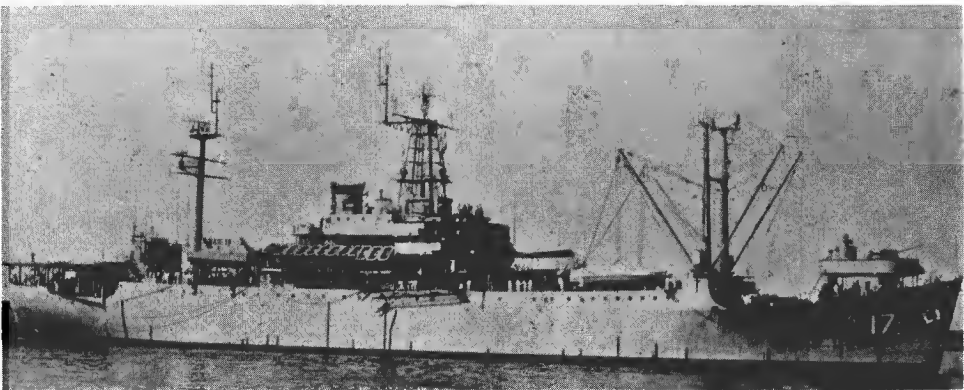
PHOTOGRAPHS. A photograph of *Mount Olympus* appears in the 1952-53 to 1959-60 editions, and of *Eldorado* in the 1962-63 to 1964-65 editions. Photographs of *Mount McKinley* appear in the 1961-62 to 1965-66 editions.

FLAGSHIPS



POCONO

1965, United States Navy, Official



TACONIC (helicopter flight deck left)

Added 1966, Dr Giorgio Arra

DISPOSALS
Of this class *Wasatch* (ex-Fleetwing), AGC 9, was stricken on 1 Jan 1960, *Auburn*, AGC 10, and *Panamint*, AGC 13, at the end of 1960, *Adirondack*, AGC 15, *Mount Olympus* (ex-Eclipse), AGC 8, and *Teton* (ex-Witch of the Wave),

AGC 14, in 1961. Of the four of the "Appalachian" class, *Appalachian*, AGC 1, and *Catoctin*, AGC 5, were stricken from the Navy List on 1 Mar 1959, end *Blue Ridge*, AGC 2, and *Rocky Mount*, AGC 3, on 1 Jan 1960.

NUCLEAR POWERED GUIDED MISSILE CRUISER (CGN)

Name	No.	Builders	Engineers	Laid down	Launched	Completed
LONG BEACH	CGN 9 (ex-CGN 160)	Bethlehem Steel Company, Quincy	Westinghouse & General Electric	2 Dec 1957	14 July 1959	1 Sep 1961

Displacement, tons	14 200 standard; 15 000 normal; 15 947 full load
Length, feet (metres)	721.2 (219.8)
Beam, feet (metres)	73.2 (22.3)
Draft, feet (metres)	32.0 (9.8)
Missiles, AA	1 "Talos" twin launcher aft; 2 "Terrier" twin launchers forward "Asroc" launcher amidships
A/S	2-5 in (127 mm) 38 cal.
Guns, dual purpose	6 (2 triple)-12 in (305 mm)
Torpedo tubes	torpedo tubes on main deck before the bridge
Nuclear reactors	2 Westinghouse CI W pressurised water-cooled
Main engines	GE geared turbines 80 000; 2 shafts 30.5 on trials
Speed, knots	100 000 at full power; 360 000 at 20 knots
Radius, miles	Allowance: 60 officers, 925 men Accommodation for 80 officers, 1 080 men
Complement	

Originally classified as guided missile light cruiser (CLGN). Provided under Fiscal 1957 Naval Appropriations. Designed by US Navy Bureau of Ships. No armour. To have cost \$250 000 000 including \$18 335 305 for nuclear reactors; but final cost was \$332 500 000. She commissioned on 9 Sep 1961 and joined the Fleet late 1961. Transferred to the Pacific Fleet in 1966.

DESIGN. The first ship to be designed and constructed from the keel up as a cruiser for the United States since the end of the Second World War, the first surface ship to be armed with a main armament of guided missiles and powered by a nuclear engineering plant, and the first nuclear powered surface fighting ship in the world.



LONG BEACH

1965, United States Navy, Official

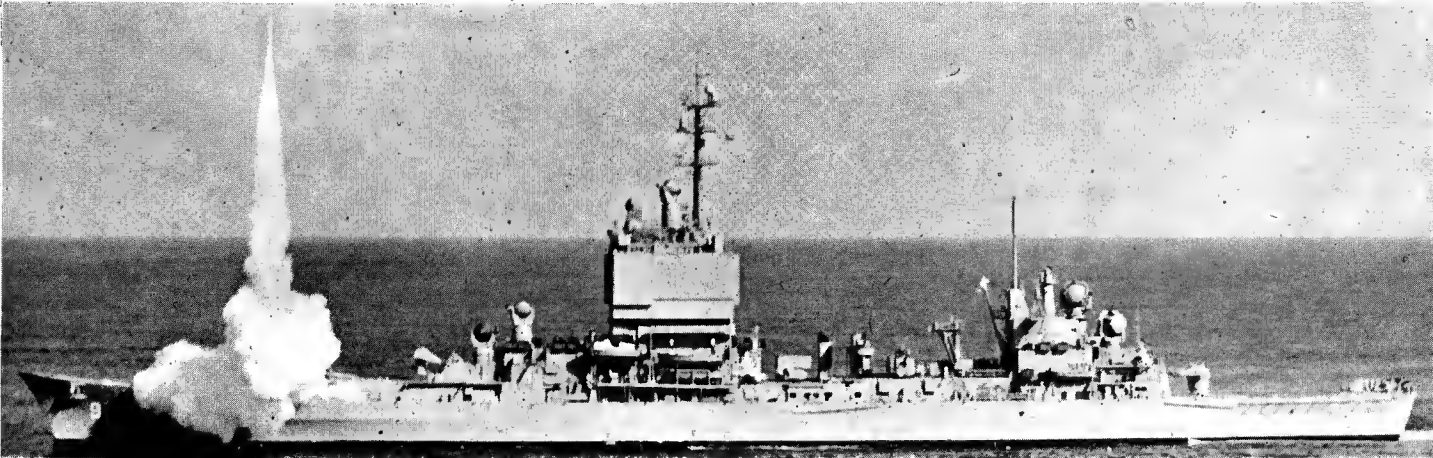
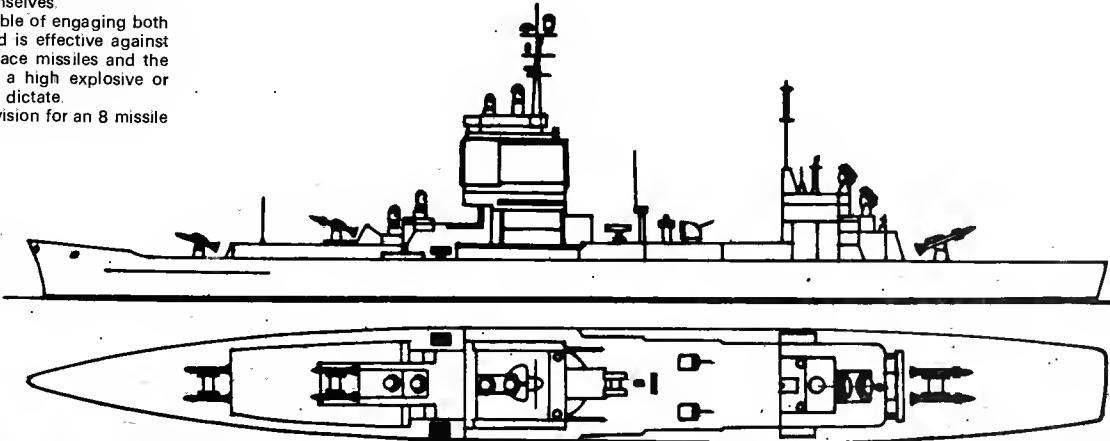
GUIDED MISSILES. The complex handling and launching system for "Talos" weighs over 350 tons. The system was designed to store, load, train, elevate, and launch the guided missiles, which weigh 3 000 pounds and are 31 feet long, including booster, and 30 inches in diameter. The launching equipment automatically selects the type of missile the fire control officer chooses and delivers it to the launching station. The control system is so complex that the equipment must not only remember which missile is in which rack but must also remember any change made in the racks themselves. The ramjet propelled "Talos" is capable of engaging both supersonic and subsonic targets and is effective against enemy planes employing air-to-surface missiles and the missiles themselves. It can deliver a high explosive or atomic warhead, as circumstances dictate. The design of the ship included provision for an 8 missile "Polaris" launching system

GUNNERY. In 1963 the ship was fitted with two single 5-inch guns for use against surface targets and slower aircraft. ELECTRONICS. Modern improvements in electronic detection devices are installed. Fitted with NTDS (Naval Tactical Data System) at Philadelphia in 1962. Equipped with sonar.

ENGINEERING. Westinghouse Electric Corporation constructed the reactor compartment components. General Electric Company constructed the main engines and gears. ELECTRICAL. Westinghouse Electric Corporation built the six turbine generator sets, each of which has a rating of 2 500 kilowatts.

PHOTOGRAPHS. A large oblique aerial view, and a port quarter oblique aerial view, appear in the 1961-62 edition; a starboard dead broadside surface view and a starboard bow surface view in the 1962-63 edition; a starboard broadside aerial view and a port bow aerial view in the 1963-64 edition; and a starboard broadside surface view and a port oblique aerial view in the 1964-65 edition

DRAWING. Port elevation and plan. Redrawn in 1964. Scale 128 feet = 1 inch.



LONG BEACH (No. 1 "Terrier" being fired off the starboard side forward)

1965, United States Navy, Official

GUIDED MISSILE CRUISERS (CG) Fully Converted from Heavy Cruisers (CA)

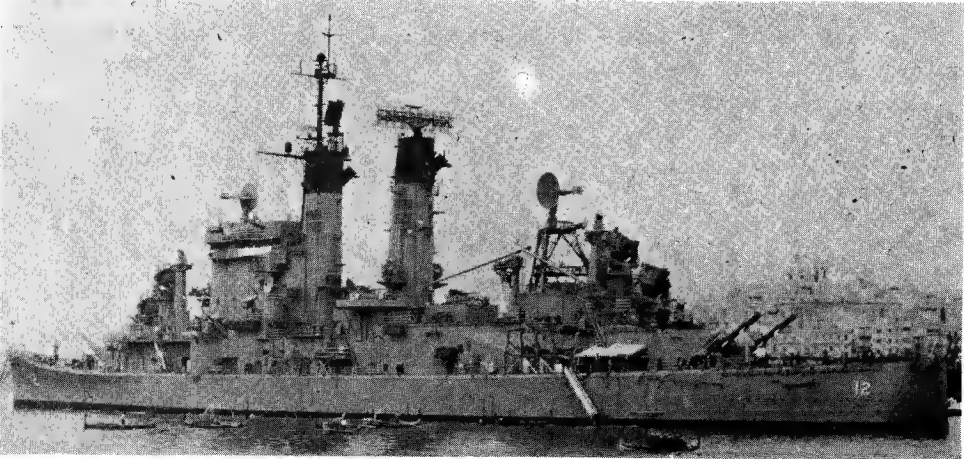
3 Double-Ended and Double-Sided Type

Name	No.	Builders	Laid down	Launched	Completed
ALBANY	CG 10 (ex-CA 123)	Bethlehem Steel Co, Quincy	6 Mar 1944	30 June 1945	15 June 1946
CHICAGO	CG 11 (ex-CA 136)	Philadelphia Naval Shipyard	28 July 1943	20 Aug 1944	8 June 1945
COLUMBUS	CG 12 (ex-CA 74)	Bethlehem Steel Co, Quincy	28 June 1943	30 Nov 1944	10 Jan 1945

Displacement, tons	13 700 standard; 17 500 full load
Length, feet (metres)	674 (205·4) oa
Beam, feet (metres)	71 (21·6)
Draft, feet (metres)	27 (8·2)
Missiles, AA	2 "Talos" twin launchers, 1 fwd, 1 aft; 2 "Tartar" twin launchers, 1 port, 1 stbd.
A/S	"Asroc" octuple launcher
Guns, dual purpose	2—5 in (127 mm) 38 cal. in open mounts each side after mack
Torpedo tubes	6, 2 triple
Armour	Side belts 6 in (152 mm); decks 3 in (76 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
Speed, knots	34
Complement	1 010 (60 officers, 950 men)
	Accommodation, 85 officers and 1 120 men

Originally *Albany* was of the "Oregon City" class heavy cruisers with one funnel, while *Chicago* and *Columbus* were of the "Baltimore" heavy cruisers with two funnels, but both classes had similar dimensions, armament and propelling machinery and all three ships were rebuilt to the same design so they constitute a homogeneous new class of unique type.

CONVERSION. The ships were stripped down to the main hull, having been redesigned from the third deck up, and building then started afresh to the recast layout. The reconstruction consisted of the entire suppression of the old conception of armament and separate funnels and masts, and the installation of guided weapons both

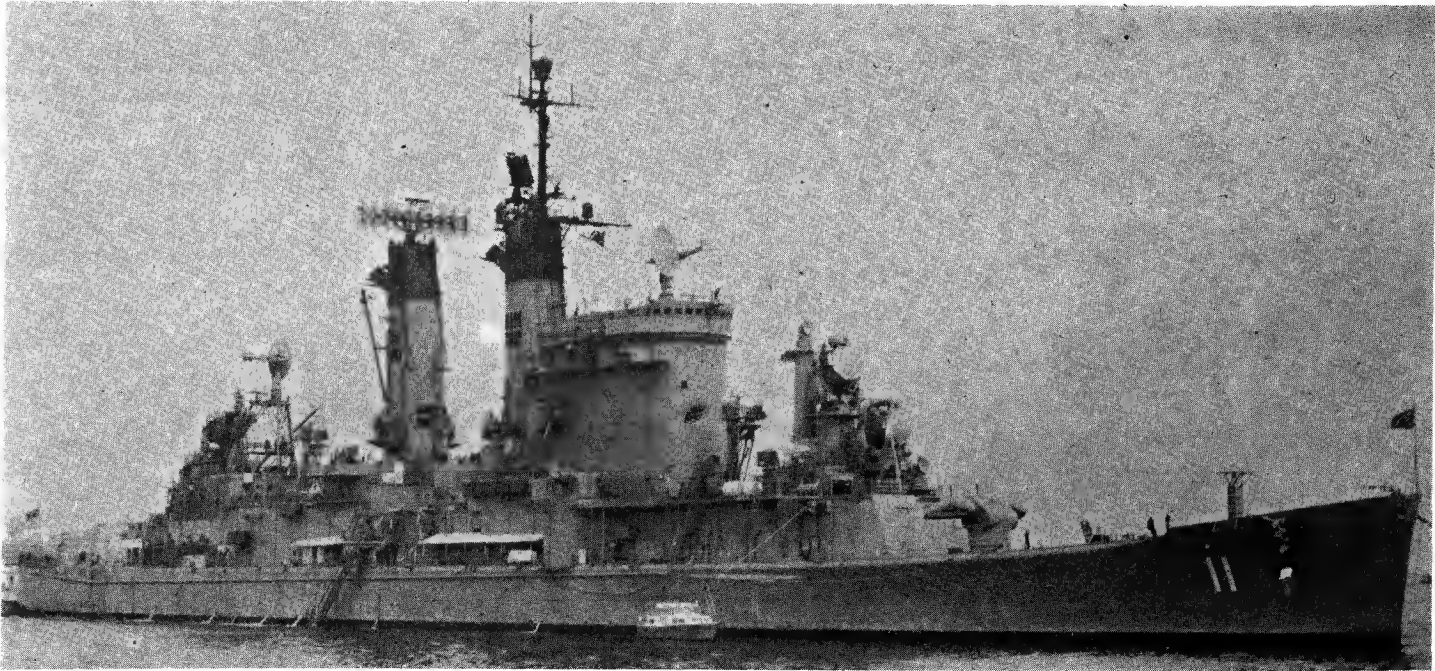


COLUMBUS

1967, A. & J. Pavia

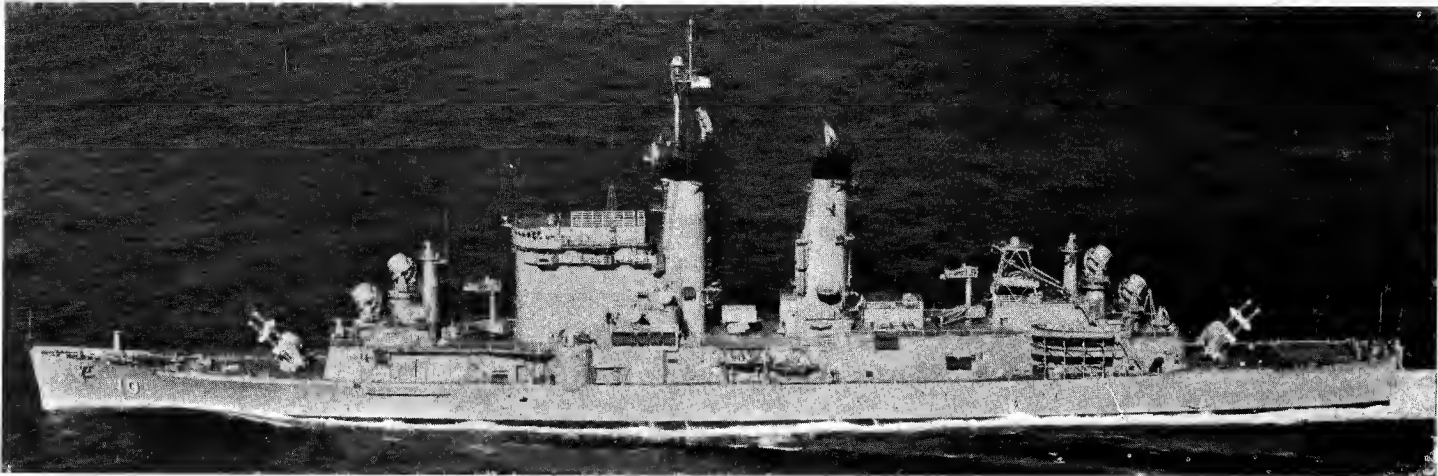
forward and aft and on both beams, thus giving the term "Double-ended and double-sided", with combined mast-stacks or "macks" replacing the former masts and stacks. The first conventionally powered cruisers to have all their guns replaced by guided missile launchers (it was subsequently decided to add two 5 inch guns). They are also fitted with sonar and anti-submarine weapons. The design included provision for an 8 missile "Polaris" launching system. *Albany* was con-

verted at Boston Naval Shipyard between 2 Jan 1959 and 3 Nov 1962. *Columbus* at Puget Sound Naval Shipyard 1 June 1959 to 1 Mar 1963, and *Chicago* at San Francisco Naval Shipyard 1 July 1959 to 1 Sep 1964. *Albany*, converting to AAW at Boston Naval Shipyard, is being fitted with NTDS (Naval Tactical Data System). *Chicago* is to be fitted with NTDS and FAST (Fleet Automatic Shuttle Transfer) system, and *Columbus* in the FY 1967 Programme.



CHICAGO

1967, courtesy G. Schneider



ALBANY

1963, United States Navy, Official

GUIDED MISSILE CRUISERS (CLG). Conversion from Cruisers (CL)

Name	No.	Builders	Laid down	Launched	Completed
GALVESTON	CLG 3 (ex-CL 93)	Cramp Shipbuilding Co	20 Feb 1944	22 Apr 1945	24 May 1946
LITTLE ROCK	CLG 4 (ex-CL 92)	Cramp Shipbuilding Co	6 Mar 1943	27 Aug 1944	17 June 1945
OKLAHOMA CITY	CLG 5 (ex-CL 91)	Cramp Shipbuilding Co	3 Mar 1942	20 Feb 1944	22 Dec 1944
PROVIDENCE	CLG 6 (ex-CL 82)	Bethlehem Steel Co, Quincy	27 July 1943	28 Dec 1944	15 May 1945
SPRINGFIELD	CLG 7 (ex-CL 66)	Bethlehem Steel Co, Quincy	13 Feb 1943	9 Mar 1944	8 Sep 1944
TOPEKA	CLG 8 (ex-CL 67)	Bethlehem Steel Co, Quincy	21 Apr 1943	19 Apr 1944	23 Dec 1944

Single-Ended Type
6 Converted "Cleveland" Class

Displacement, tons	10 670 standard; 14 600 full load
Length, feet (metres)	600 (182.9) wl; 610 (185.9) oa
Beam, feet (metres)	66 (20.1)
Draft, feet (metres)	25 (7.6)
Missiles, AA	CLG 3, 4, 5: 1 "Talos" twin launcher aft, with 46 missiles; Remainder: 1 "Terrier" twin launcher aft, with 120 missiles
Guns, surface	3—6 in (152 mm) 47 cal., triple
Guns, dual purpose	CLG 3, CLG 8: 6—6 in, 2 triple 2—5 in (127 mm) 38 cal., twin
Armour	CLG 3, CLG 8: 6—5 in, 3 twin Belt and decks: 5 in (127 mm) gunhouses: 5—3 in (127—76 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines 100 000 shp; 4 shafts
Speed, knots	33
Radius, miles	7 500 at 15 knots
Oil fuel (tons)	2 100
Complement	CLG 3, 4, 5: 1 077 (67 officers, 1 010 men); Remainder: 1 012 (67 officers, 945 men)
Accommodation	CLG 3, 4, 5: 125 officers and 1 270 men; Remainder 70 officers and 2 000 men (varies)

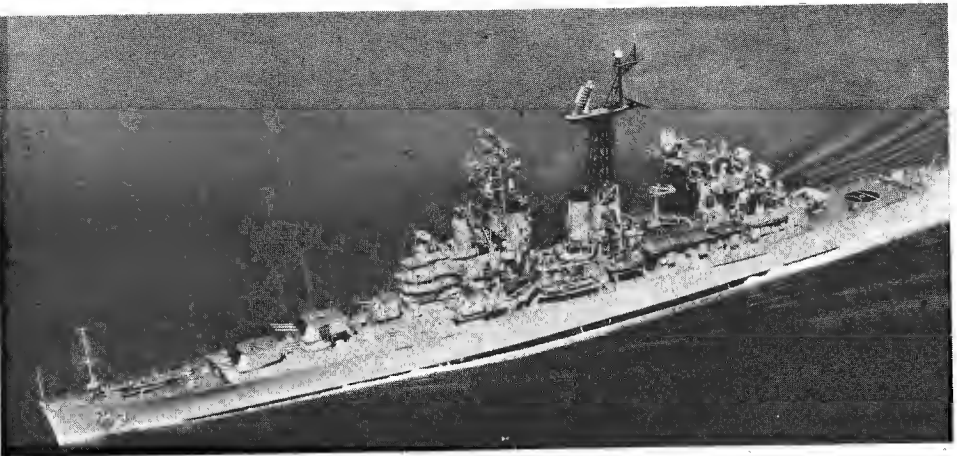
These six former cruisers of the "Cleveland" class (CL) were converted into guided missile cruisers (CLG), *Galveston* under the 1956 Fiscal Year Programme and the other five under the 1957. They have conventional armament forward, and amidships, and guided missile launchers aft, three being armed with "Terrier" missiles and three with "Talos" missiles. Other work, including improvement of habitability, was also done in conjunction with the installation of missile capabilities.

FLAGSHIPS. *Little Rock*, *Oklahoma City*, *Providence* and *Springfield* were refitted as flagships, the navigating bridge and forward superstructure being reconstructed to provide for flag spaces. *Springfield* became 6th Fleet flagship on 14 Dec 1960. *Oklahoma City* became 7th Fleet flagship on 1 July 1964, replacing *Providence* as such. *Little Rock* was 2nd Fleet flagship Oct 1961 to 1962, and again later until Jan 1966. *Providence* relieved *Oklahoma City* as 7th Fleet flagship in Nov 1966. *Little Rock* relieved *Springfield* as 6th Fleet flagship in Jan 1967.

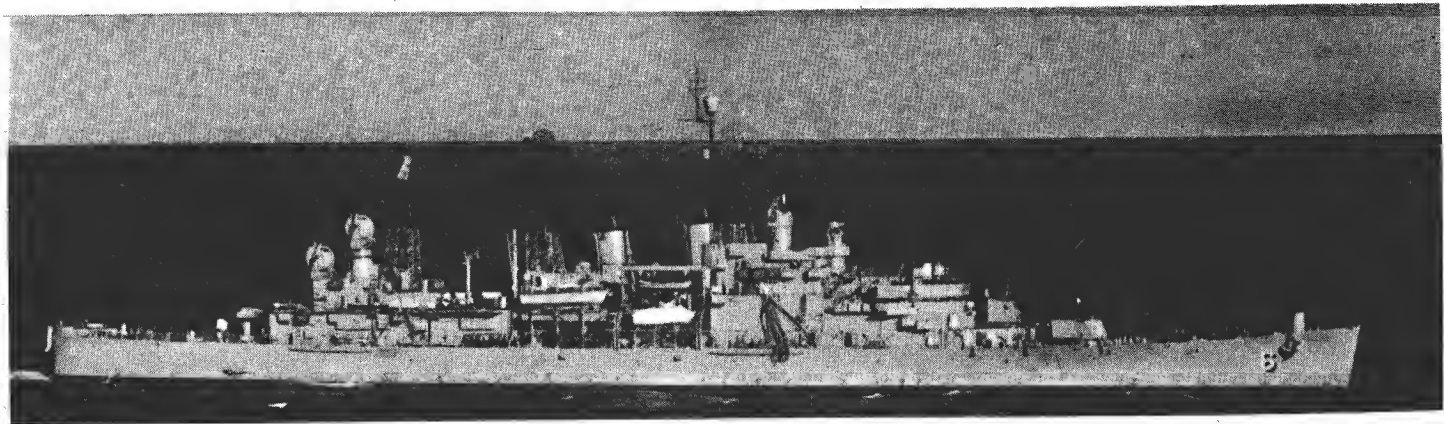
CONVERSION. *Galveston* was converted at Philadelphia Naval Shipyard. She was reclassified CLG 93 on 4 Feb 1956, and CLG 3 on 23 May 1957. Conversion began on 15 Aug 1956 and was completed on 5 Sep 1958. *Topeka* was converted at New York Naval Shipyard; *Oklahoma City* at Bethlehem Pacific Coasts Steel Corp. San Francisco, Calif; *Little Rock* at New York Shipbuilding Corp, Camden, NJ; and *Providence* at Boston Naval Shipyard. *Providence* began conversion on 1 June 1957, and completed on 30 Sep 1959. *Topeka* began conversion on 19 Aug 1957 and completed on 26 Mar 1960. *Little Rock* began conversion on 30 Jan 1957 and commissioned on 3 June 1960. *Oklahoma City* began conversion on 21 May 1957 and commissioned on 7 Sep 1960. *Springfield* began conversion on 1 Aug 1957 at Bethlehem Steel Co, Quincy, Mass, but was moved to Boston Naval Shipyard on 22 Mar 1960 for completion on 2 July 1960.



OKLAHOMA CITY 1965, United States Navy, Official

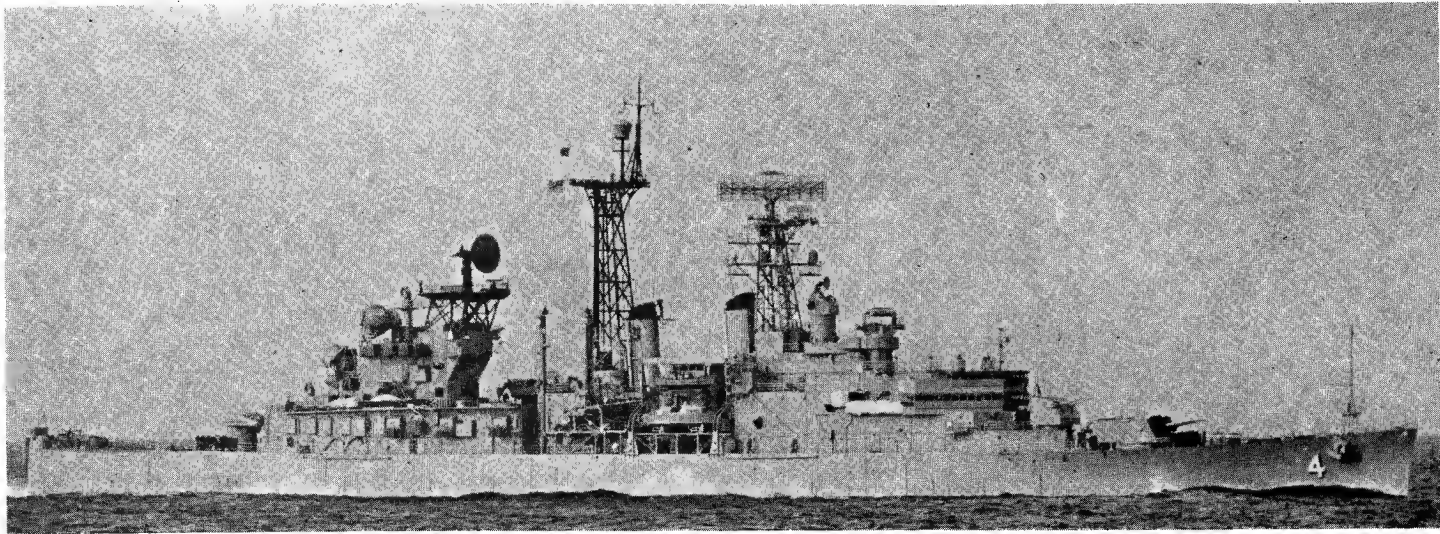


GALVESTON 1965, United States Navy, Official



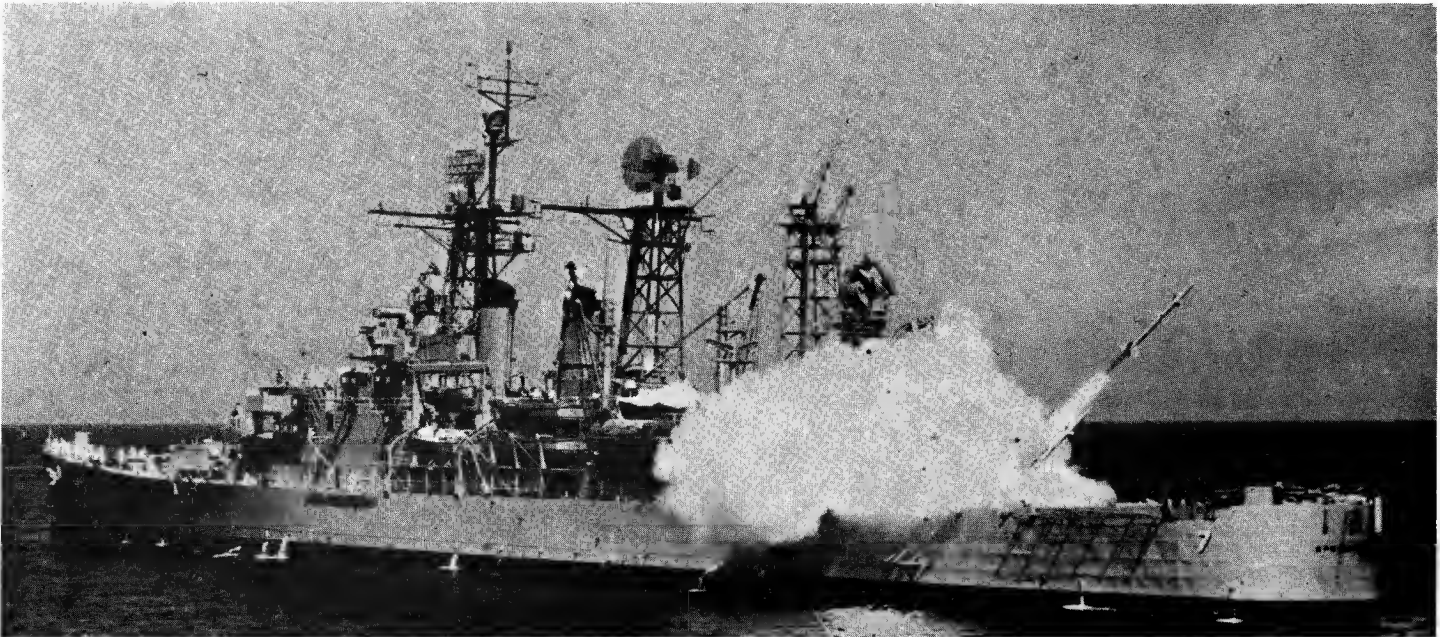
PROVIDENCE 1966, United States Navy, Official

Guided Missile Cruisers (CLG)—continued



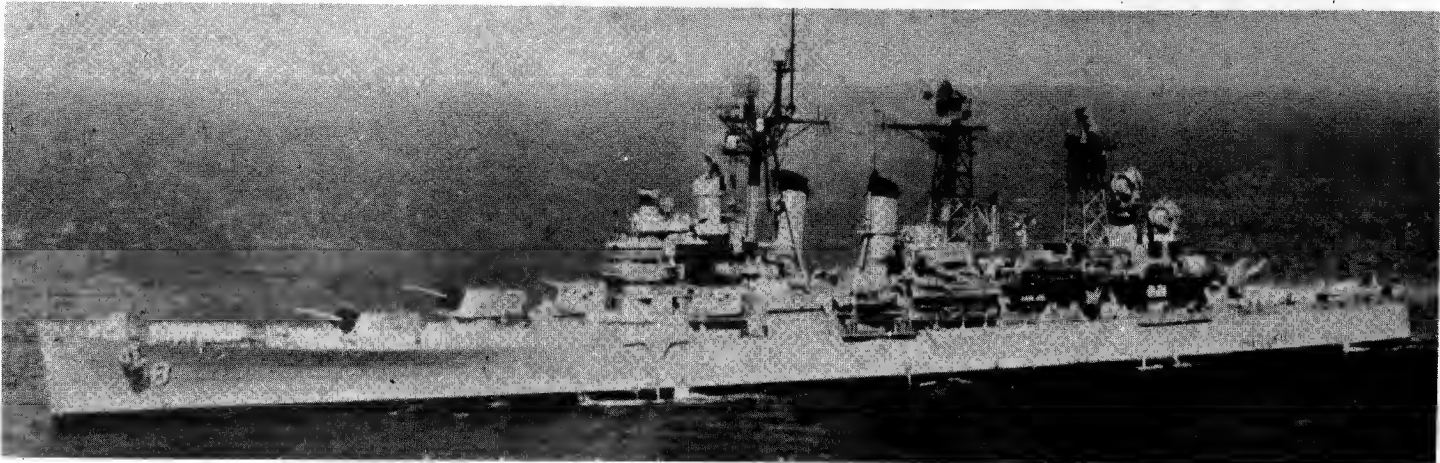
LITTLE ROCK (with new range and height finding radar)

1967, Dr Aldo Fraccaroli



SPRINGFIELD

1966, United States Navy, Official



TOPEKA

1966, United States Navy, Official

6 Converted "Cleveland" Class
Single-Ended Type—continued

GUIDED MISSILES. The "Talos" ramjet-powered surface-to-air missile, the principal armament in the *Galveston*, has a range of more than 65 miles and is able

to carry a nuclear warhead. See full notes under *Long Beach* on a previous page.

PHOTOGRAPHS. Port broadside and starboard bow views of *Galveston* and a starboard bow view of *Providence* (Addenda) appear in the 1959-60 edition, a port broadside aerial view of *Little Rock* in the 1960-61 to 1963-64 editions, a starboard quarter aerial view of

Galveston in the 1959-60 to 1964-65 editions, a port oblique surface view of *Oklahoma City* in the 1961-62 to 1964-65 editions, a starboard bow surface view of *Providence* in the 1960-61 to 1965-66 editions, a starboard bow oblique aerial view of *Topeka* and a port dead broadside surface view of *Springfield* in the 1961-62 to 1965-66 editions, a port bow oblique aerial view of *Little Rock* in the 1964-65 to 1966-67 editions.

GUIDED MISSILE CRUISERS (CAG). Converted from Heavy Cruisers (CA)

Name	No.	Builders	Laid down	Launched	Completed	Converted
BOSTON	CAG 1 (ex-CA 69)	Bethlehem Steel Co, Quincy	30 June 1941	26 May 1942	30 June 1943	1 Nov 1955
CANBERRA (ex-Pittsburgh)	CAG 2 (ex-CA 70)	Bethlehem Steel Co, Quincy	3 Sep 1941	19 Apr 1943	14 Oct 1943	15 June 1956

Single-Ended Type

2 Converted "Baltimore" Class

Displacement, tons	13 300 standard; 17 500 full load
Length, feet (metres)	673.5 (205.3) oa
Beam, feet (metres)	71 (21.6)
Draft, feet (metres)	26 (7.9)
Missiles, AA	2 "Terrier" twin launchers aft
Guns, surface	6—8 in (203 mm) 55 cal.
Guns, dual purpose	10—5 in (127 mm) 38 cal.
Guns, AA	12—3 in (76 mm) 50 cal.
Armour	Side belts 6 in (152 mm); decks 3 in (76 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	120 000 shp; 4 shafts
Speed, knots	34
Oil fuel (tons)	2 500
Complement	1 273 (73 officers, 1 200 men)
Accommodation	80 officers and 1 400 men



CANBERRA

1966, Aldo Fraccaroli

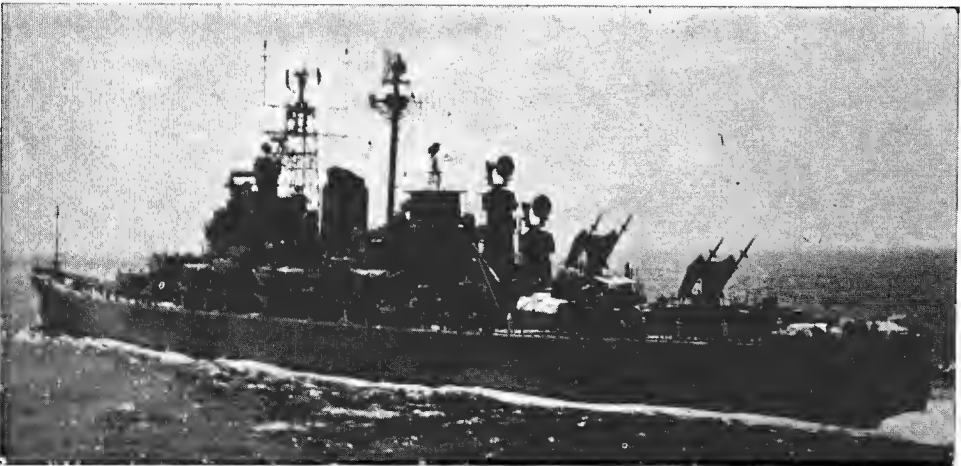
The world's first guided missile cruisers and first operational combat ships capable of firing supersonic anti-aircraft guided missiles. Formerly classified as Heavy Cruisers (CA). *Canberra*, just before original completion, was renamed in commemoration of the heavy cruiser *Canberra*, of the Royal Australian Navy, which was sunk in the first Battle of Savo Island on 9 Aug 1942.

CONVERSION. Both ships were converted to Guided Missile Heavy cruisers (CAG) by New York Shipbuilding Corporation, Camden, New Jersey, at a cost of \$30 000 000 for the two. The after 143-ton 8 inch gun turret and the after 5 inch twin mounting were removed and two twin guided missile launchers mounted in "X" and "Y" positions in their place. Both ships underwent other drastic changes for their new role of defence against aircraft. The superstructure was entirely remodelled to accommodate the new weapons. One of original two funnels was removed, radically changing the ships' appearance.

GUIDED MISSILES. A supersonic anti-aircraft weapon, with a length of 27 feet and a speed of 1 500 mph the "Terrier" was designed to intercept aircraft under any weather conditions at a longer range and higher altitudes than conventional anti-aircraft guns. Stowage of the "Terrier" is below decks in two magazines, completely automatic loading devices. Each of the two twin launchers is capable of firing two "Terriers" simultaneously. Can launch four missiles in eight-tenths of a second. Two missiles per launcher every 30 seconds. Automatic loading. 144 "Terrier" missiles carried in each ship.

MODERNISATION. Both ships carry "Terrier" 1, with a 10-mile range, *Boston* is to be modernised to handle newer, longer-range versions of "Terriers". It is expected that *Canberra* will receive the same improvements.

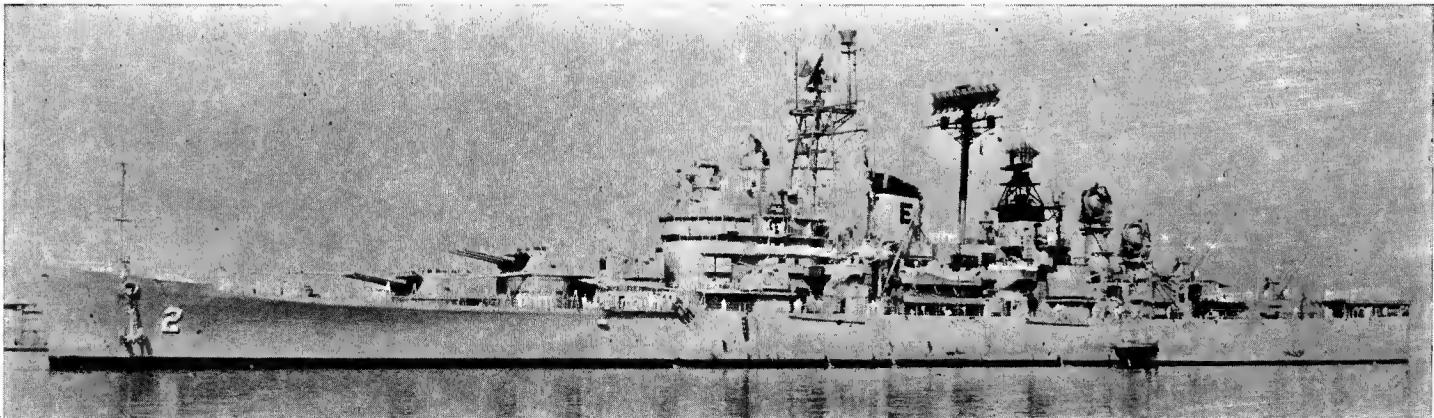
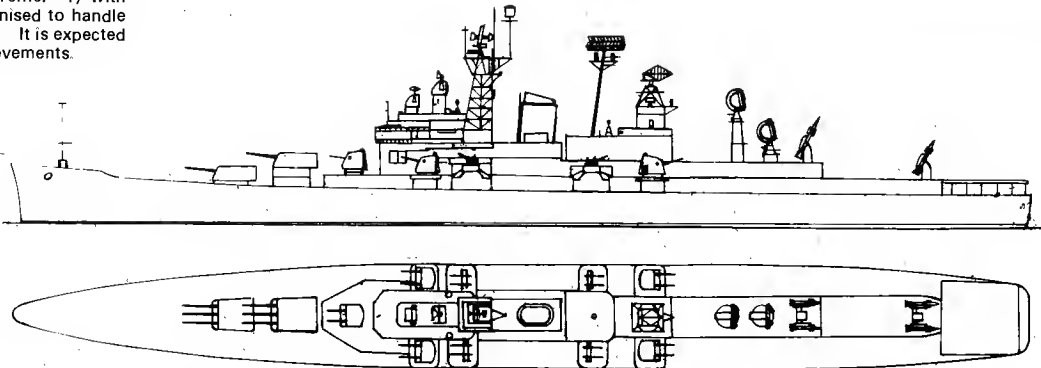
PHOTOGRAPHS. A port quarter oblique aerial view of *Boston* appears in the 1956-57 to 1958-59 edition, a starboard quarter surface view in the 1959-60 edition, a starboard bow oblique aerial view in the 1956-57 to 1961-62 editions, and a port broadside surface view in the 1962-63 edition. A port broadside surface view of *Canberra* appears in the 1958-59 to 1961-62 editions, and a starboard quarter view in the 1962-63 to 1965-66 editions.



BOSTON

1960, courtesy Commander John C. Parry USNR

DRAWING. Port elevation and plan of *Canberra*. Redrawn in 1965. Scale: 128 feet = 1 inch.



CANBERRA (new radar aerial, helicopter platform aft)

1963, Giorgio Arra

3 "Salem" Class

HEAVY CRUISERS (CA)

Name	No.	Builders	Laid down	Launched	Completed
DES MOINES	CA 134	Bethlehem Steel Co, Quincy	28 May 1945	27 Sep 1946	17 Nov 1948
SALEM	CA 139	Bethlehem Steel Co, Quincy	4 June 1945	25 Mar 1947	9 May 1949
NEWPORT NEWS	CA 148	Newport News S8 & DD Co	1 Oct 1945	6 Mar 1947	29 Jan 1949

Displacement, tons	17 000 standard; 21 500 full load
Length, feet (metres)	717 (218.5) oa
Beam, feet (metres)	75.5 (23.0)
Draft, feet (metres)	26.0 (7.9)
Aircraft	1 helicopter
Guns, surface	9—8 in (203 mm) 55 cal. in 3 triple turrets
Guns, dual purpose	12—5 in (127 mm) 38 cal., 6 twin
Guns, AA	16—3 in (76 mm) 50 cal., 6 twin (see Gunnery notes)
Armour	Sides 8 in (203 mm) — 6 in (152 mm); decks 3 in + 2 in (76 + 51 mm)
Boilers	4 Babcock & Wilcox
Main engines	Geared turbines 120 000 shp; 4 shafts
Speed, knots	33
Radius, miles	8 000 at 15 knots
Oil fuel (tons)	2 600
Complement	1 300 (60 officers, 1 240 men)
Accommodation	103 officers and 1 565 men

The heaviest cruisers in the world, and the first vessel to mount completely automatic rapid-fire 8-inch guns. They were an expansion of the "Oregon City" class design. Much of extra tonnage is absorbed by rapid loading gear and extra magazine space. *Newport News* and *Salem* were the first completely air-conditioned cruisers. *Des Moines* is not air-conditioned.

CONVERSION. *Newport News* underwent limited conversion at Norfolk Naval Shipyard in 1961-62 for her role as Second Fleet Flagship in the Atlantic.

GUNNERY. All guns are fully automatic. Cartridge cases replaced wrapped charges. Shells have automatic fuse setting. 8-inch guns are capable of firing four times more rapidly than any previous model. There is provision for 24—3 inch AA guns in 12 twin mountings; but the twin mountings abreast the funnel are not installed in peacetime, and the twin mountings on the forecastle have been removed from *Newport News*.



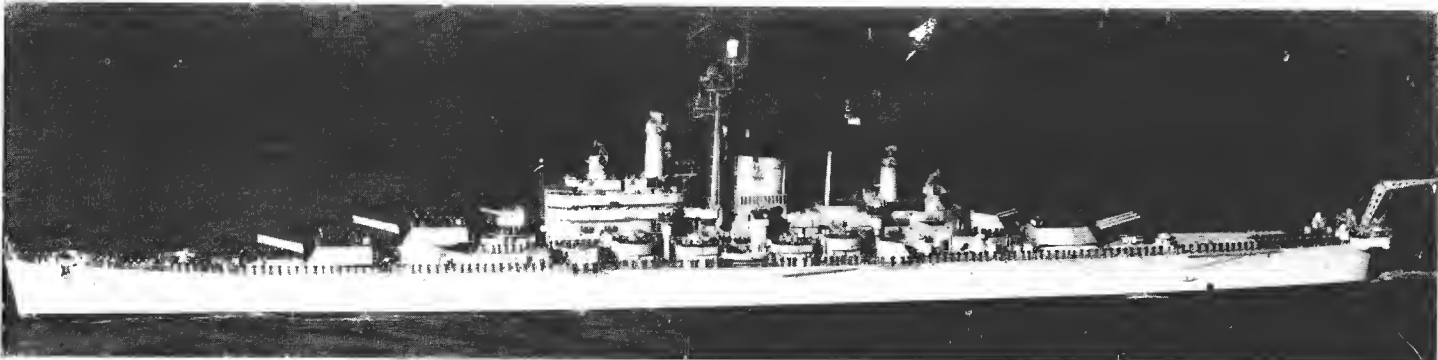
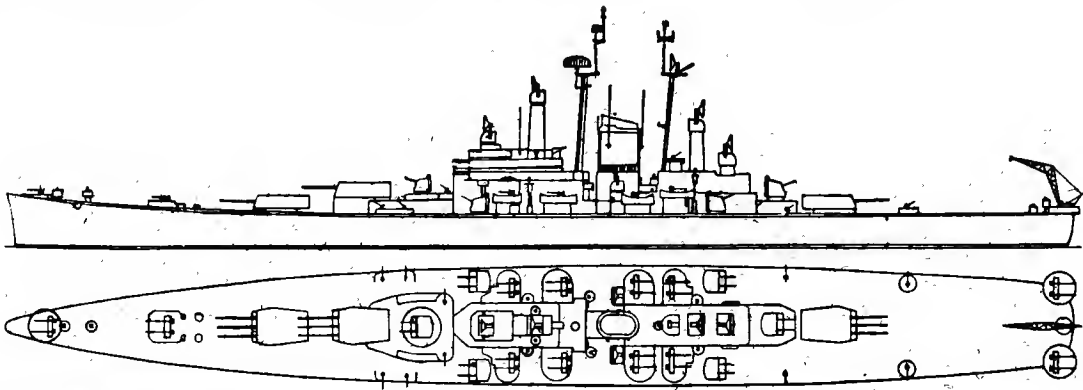
NEWPORT NEWS

1967, United States Navy, Official

PHOTOGRAPHS. Starboard bow view of *Salem* in the 1957-58 edition, broadside section view of *Salem* in the 1959-60 and 1960-61 editions, starboard broadside aerial view of *Newport News* in the 1957-58 to 1960-61 editions. Starboard bow oblique aerial view of *Des Moines* in the 1957-58 to 1961-62 editions, starboard bow oblique aerial view of *Newport News* in the 1961-62 edition.

APPEARANCE. With single funnels, these three ships resemble the "Oregon City" class. After refit as flagship *Newport News* has an antennae mast on the forecastle.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch. The 20 mm AA guns shown have since been removed.



DES MOINES

1962, United States Navy, Official



SALEM

Added 1967, United States Navy, Official

Heavy Cruisers—continued

Name	No.	Builders	Laid down	Launched	Completed
OREGON CITY	CA 122	Bethlehem Steel Co, Quincy	8 Apr 1944	9 Feb 1945	16 Feb 1946
ROCHESTER	CA 124	Bethlehem Steel Co, Quincy	29 May 1944	28 Aug 1945	20 Dec 1946

2 "Oregon City" Class

Displacement, tons	
<i>Oregon City</i>	13 700 standard; 17 500 full load
<i>Rochester</i>	13 000 standard; 17 500 full load
Length, feet (metres)	673.5 (205.3) oa
Beam, feet (metres)	71 (21.6)
Draft, feet (metres)	26 (7.9)
Aircraft	1 helicopter
Guns, surface	9—8 in (203 mm) 55 cal. in 3 triple turrets
Guns, dual purpose	12—5 in (127 mm) 38 cal., 6 twin
Guns, AA	<i>Oregon City</i> : 52—40 mm; 24—20 mm; <i>Rochester</i> : 20—3 in (76 mm)
Armour	50 cal., in 10 twin mounts Sides: 6 in (152 mm); Decks: 3 in + 2 in (76 + 51 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines 120 000 shp; 4 shafts
Speed, knots	33
Radius, miles	9 000 at 15 knots
Oil fuel (tons)	2 500
Complement	1 128 (53 officers, 1 075 men)
Accommodation	85 officers and 1 660 men

The design of these ships is a modification of that of the "Baltimore" class, with a single funnel and simplified superstructure. The bridge is farther aft than in the "Baltimore" class. *Oregon City* retains her original armament.

ENGINEERING. Cruising turbines are not included in the machinery design. In the event of port or starboard fuel tanks being ruptured, the change-over of suction to the other side could be accomplished in a minute, oil burner lines being divided at the boiler face.

GUNNERY. *Rochester* was rearmed with 3-inch, 50 cal anti-aircraft guns in place of her former 40 mm AA guns and 20 mm AA guns.

CLASS. *Albany*, originally of this class, was converted to a guided missile cruiser at Boston Naval Shipyard between 2 Jan 1959 and 3 Nov 1962 (see previous page). Her classification and hull number was officially changed from CA 123 to CG 10 on 1 Nov 1958. She was recommissioned on 3 Nov 1962.

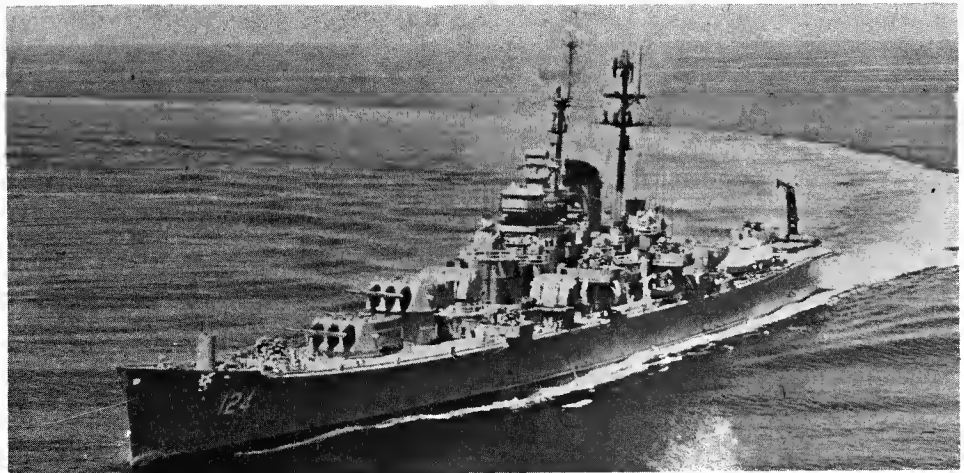
PHOTOGRAPHS. A photograph of *Albany* before conversion appears in the 1952-53 to 1957-58 editions. A starboard bow view of *Rochester* appears in the 1957-58 to 1966-67 editions.

DRAWING. Port elevation and plan of *Oregon City* and *Rochester*. Scale: 128 feet = 1 inch.



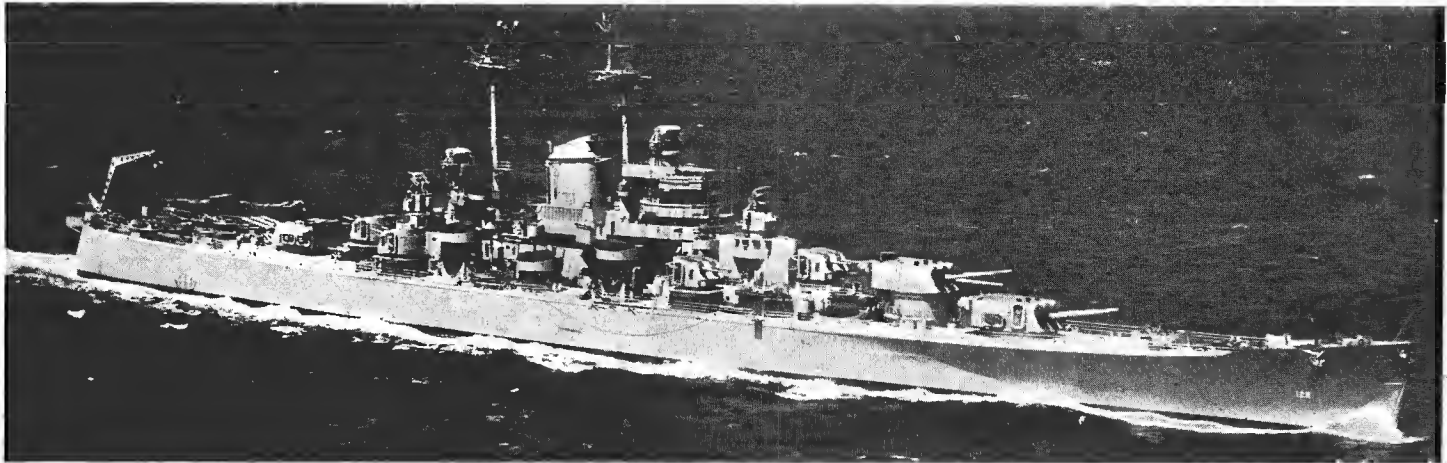
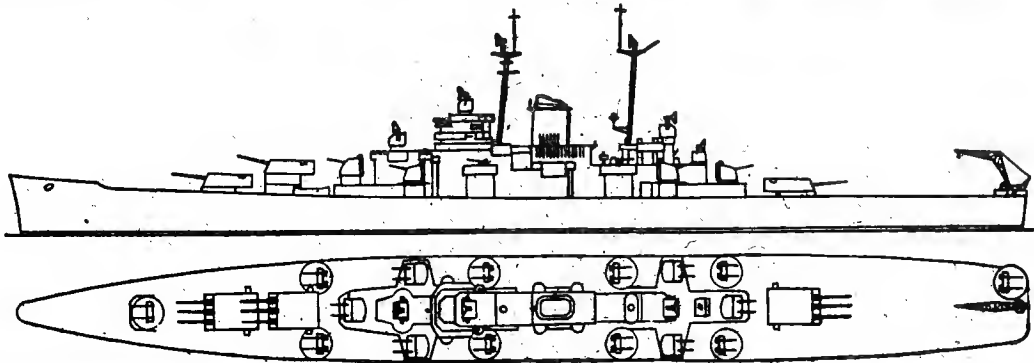
ROCHESTER

Added 1967, United States Navy, Official



ROCHESTER

Added 1965, United States Navy, Official



OREGON CITY

United States Navy, Official

Heavy Cruisers—continued

10 "Baltimore" Class

Name	No.	Builders	Laid down	Launched	Completed
BALTIMORE	CA 68	Bethlehem Steel Company, Quincy	26 May 1941	28 July 1942	15 Apr 1943
QUINCY	CA 71	Bethlehem Steel Company, Quincy	9 Oct 1941	23 June 1943	15 Dec 1943
PITTSBURG	CA 72	Bethlehem Steel Company, Quincy	3 Feb 1943	22 Feb 1944	10 Oct 1944
ST. PAUL	CA 73	Bethlehem Steel Company, Quincy	3 Feb 1943	16 Sep 1944	17 Feb 1945
HELENA	CA 75	Bethlehem Steel Company, Quincy	9 Sep 1943	28 Apr 1945	4 Sep 1945
BREMERTON	CA 130	New York Shipbuilding Corporation	1 Feb 1943	2 July 1944	29 Apr 1945
FALL RIVER	CA 131	New York Shipbuilding Corporation	12 Apr 1943	13 Aug 1944	1 July 1945
MACON	CA 132	New York Shipbuilding Corporation	14 June 1943	15 Oct 1944	26 Aug 1945
TOLEDO	CA 133	New York Shipbuilding Corporation	13 Sep 1943	6 May 1945	27 Oct 1946
LOS ANGELES	CA 135	Philadelphia Naval Shipyard	28 July 1943	20 Aug 1944	22 July 1945

Displacement, tons 13 600 standard; 17 200 full load.
Length, feet (metres) 673.5 (205.3) oa
Beam, feet (metres) 71 (21.6)
Draft, feet (metres) 26 (7.9)
Aircraft 1 helicopter
Guns, surface 9—8 in (203 mm) 55 cal., 3 triple
Guns, dual purpose 12—5 in (127 mm) 38 cal., 6 twin,
Guns, AA CA 68, 71, 72, 131: 52—40 mm.
Remainder: 14—3 in (76 mm) 50
cal.
Armour Sides: 6 in (152 mm)
decks: 3 in + 2 in (76 + 51 mm)
Boilers 4 Babcock & Wilcox
Main engines GE geared turbines
120 000 shp; 4 shafts
Speed, knots 34
Radius, miles 9 000 at 15 knots
Oil fuel (tons) 2 500
Complement 1 146 (61 officers, 1 085 men)
Accommodation: 78 officers and 1 555 men (varies)

Pittsburgh was built in 20 months. All the others except *Toledo* were built in two years. The last six of the original 14 ships of the class were built under the War Programme. Only one crane now at stern except in *Baltimore* and *Quincy* which have two cranes on the stern as shown in the photograph of *Baltimore* in the 1958-59 edition. Catapult were discarded. The classification and hull number of *Fall River* (CA 131 to CG 12) was officially changed to become effective on 1 Nov 1958, but the re-classification was cancelled on 9 Oct 1958 (*Colombus* was converted instead). *St Paul* and *Helena* now have a tower foremast and improved radar, see photograph.

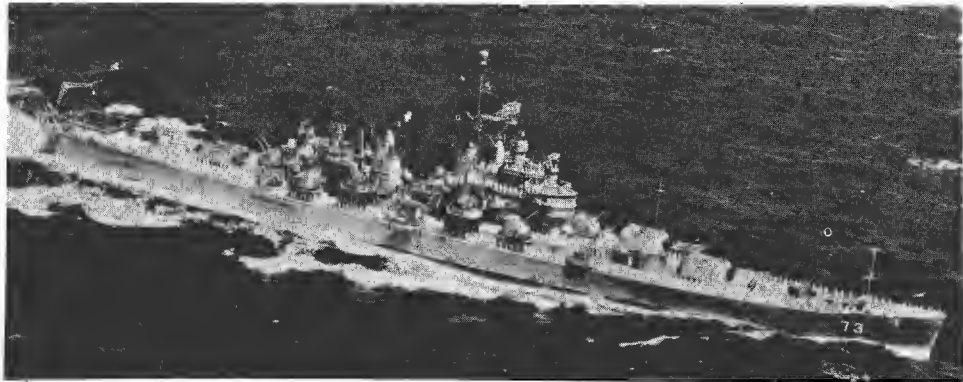
GUNNERY. The 8-inch guns were of a new model, firing a heavier shell than those mounted in previous cruisers. *Bremerton*, *Helena*, *Los Angeles*, *Macon*, *St. Paul* and *Toledo* underwent AA conversion (improved rapid-firing twin 3 inch 50 cal guns replacing 40 mm guns).

CLASS. *Boston* and *Canberra* were converted to "single ended" guided missile cruisers, and *Chicago* and *Columbus* were fully converted to "double-ended and double-sided" guided missile cruisers, see previous pages.

NOMENCLATURE. Four of the above ships were originally allocated other names:—*Helena* (ex-*Des Moines*), *Pittsburg* (ex-*Albany*), *Quincy* (ex-*St. Paul*) and *St. Paul* (ex-*Rochester*).

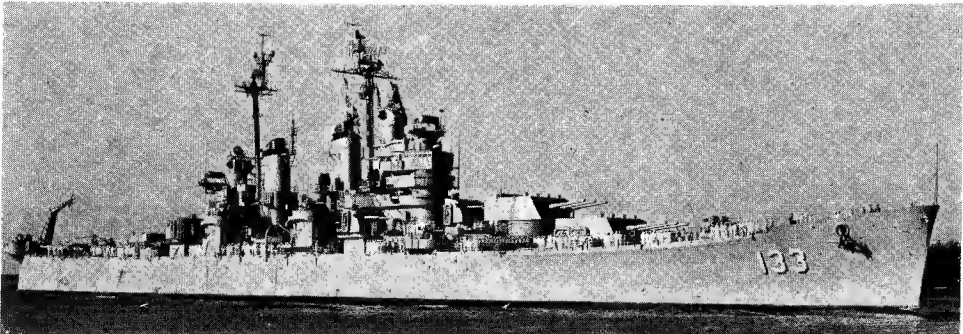
PHOTOGRAPHS. A photograph of a "Regulus" guided missile being launched from *Helena*, and a port broadside view of *Macon* appear in the 1957-58 edition, a port quarter view of *Baltimore* in the 1954-55 to 1958-59 editions, a larger starboard broadside view of *Los Angeles* in the 1958-59 to 1960-61 editions, a port bow oblique elevated view of *Helena* in the 1957-58 to 1960-61 editions, a port quarter view of *St. Paul* in the 1959-60 and 1960-61 editions, a starboard broadside surface view of *St Paul* with tower foremast and improved radar in the 1961-62 to 1965-66 editions and a port bow oblique aerial view of *Helena* in the 1961-62 to 1966-67 editions.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.



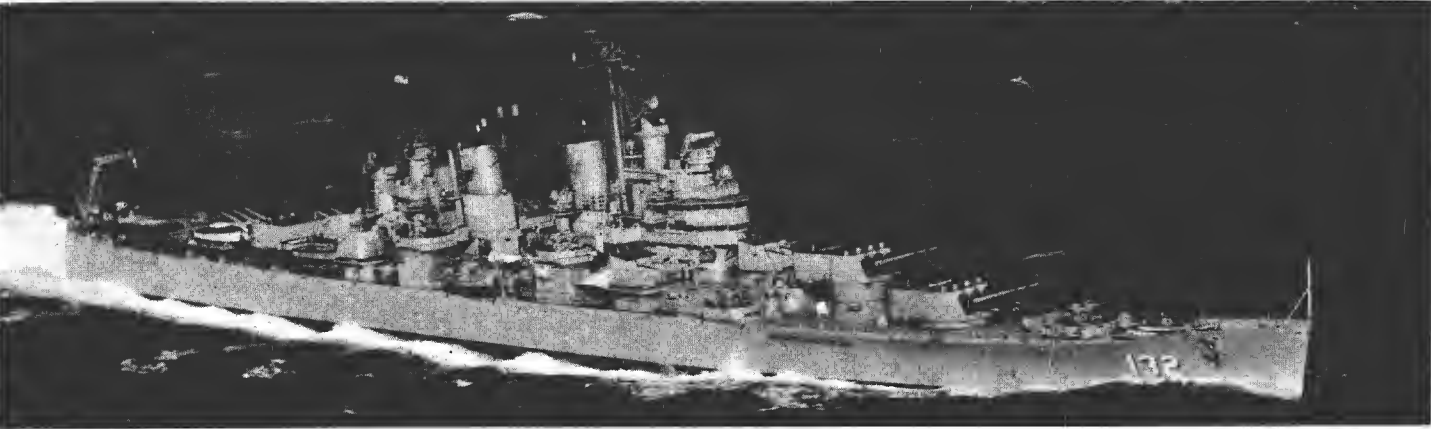
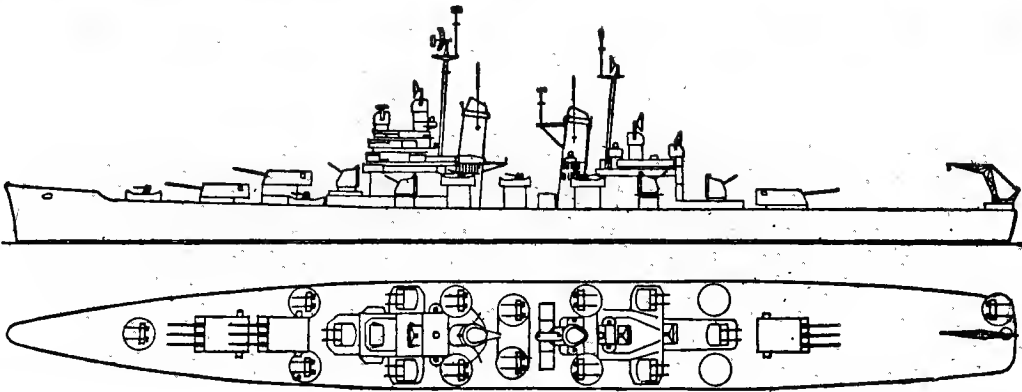
ST. PAUL

Added 1967, United States Navy, Official



TOLEDO

Added 1963, United States Navy, Official



MACON

1966, United States Navy, Official

CRUISERS (CL)

2 "Worcester" Class

Displacement, tons	14 700 standard; 18 500 full load
Length, feet (metres)	688 (209.7) wl; 679.5 (207.1) oa
Beam, feet (metres)	70.7 (21.5)
Draft, feet (metres)	25 (7.6)
Aircraft	1 helicopter
Guns, dual purpose	12—6 in (152 mm) 47 cal. 24—3 in (76 mm) 50 cal. <i>Roanoke</i> 12—3 in (76 mm) 50 cal. <i>Worcester</i>
Armour	Sides: 6 in—3 in (152—76 mm); Turrets: 4 in (102 mm); Decks: 3 + 2 in (76 + 51 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines 120 000 shp; 4 shafts
Speed, knots	32
Radius, miles	12 000 at 15 knots
Oil fuel (tons)	3 300
Complement	995 (55 officers, 940 men)
Accommodation	70 officers and 1 286 men

Both ordered on 15 June 1943. Although larger than most heavy cruisers, they were nevertheless rated as light cruisers by Treaty definitions. Both in the Pacific Reserve Fleet.

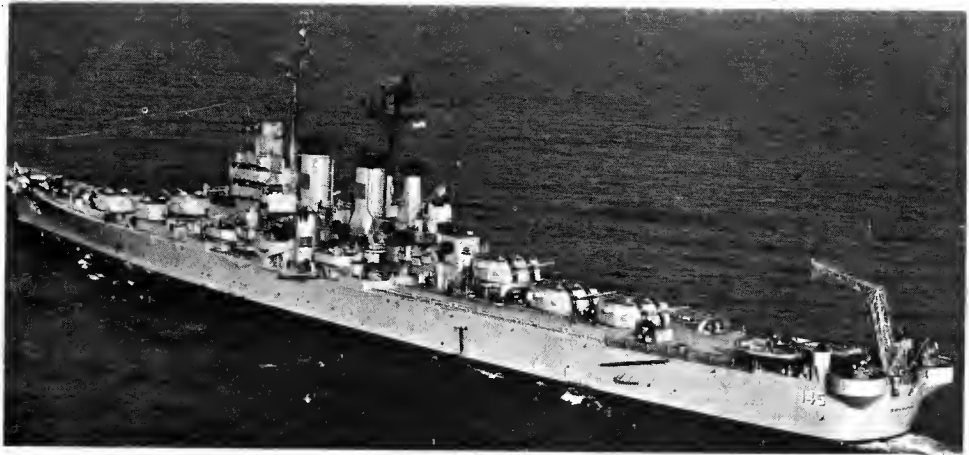
GUNNERY. The 6 inch dual purpose guns of a semi-automatic model were mounted in six twin turrets. The 3 inch rapid fire guns were disposed in eleven twin mounts and two single mounts.

CLASS. Two incomplete sister ships, *Vallejo* (146) and *Gary* (147) were cancelled on 11 Aug 1945. Six additional ships. CL 154-59, were cancelled in 1945.

PHOTOGRAPHS. A starboard quarter view of *Worcester* appears in the 1957-58 edition, a port bow oblique aerial view in the 1959-60 edition, and a starboard broadside view in the 1957-58 to 1962-63 editions. A large starboard bow surface view of *Roanoke* appears in the 1957-58 edition, and a port dead broadside aerial view in the 1958-59 to 1965-66 editions.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.

Name	No.	Builders	Laid down	Launched	Completed
ROANOKE	CL 145	New York Shipbuilding Corporation	15 May 1945	16 June 1947	4 Apr 1948
WORCESTER	CL 144	New York Shipbuilding Corporation	29 Jan 1945	4 Feb 1947	25 June 1948



ROANOKE

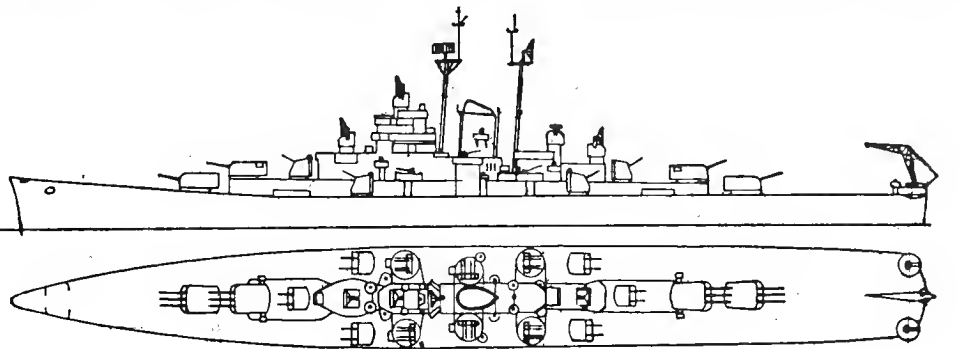
1966

1 "Fargo" Class

Displacement, tons	10 500 standard; 14 055 full load
Length, feet (metres)	600 (182.9) wl; 610 (185.9) oa
Beam, feet (metres)	66 (20.1)
Draft, feet (metres)	25 (7.6)
Catapults	2
Aircraft	3 seaplanes originally carried
Guns, surface	12—6 in (152 mm) 47 cal.
Guns, dual purpose	12—5 in (127 mm) 38 cal.
Guns, AA	24—40 mm; 19—20 mm
Armour	Sides: 5—1.5 in (127—38 mm) gunhouses: 5—3 in (127—76 mm) decks: 3 + 2 in (76 + 51 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines 100 000 shp; 4 shafts
Speed, knots	32.5
Radius, miles	9 500 at 15 knots
Oil fuel (tons)	2 500
Complement	925 (55 officers, 870 men)
Accommodation	70 officers, 1 286 men

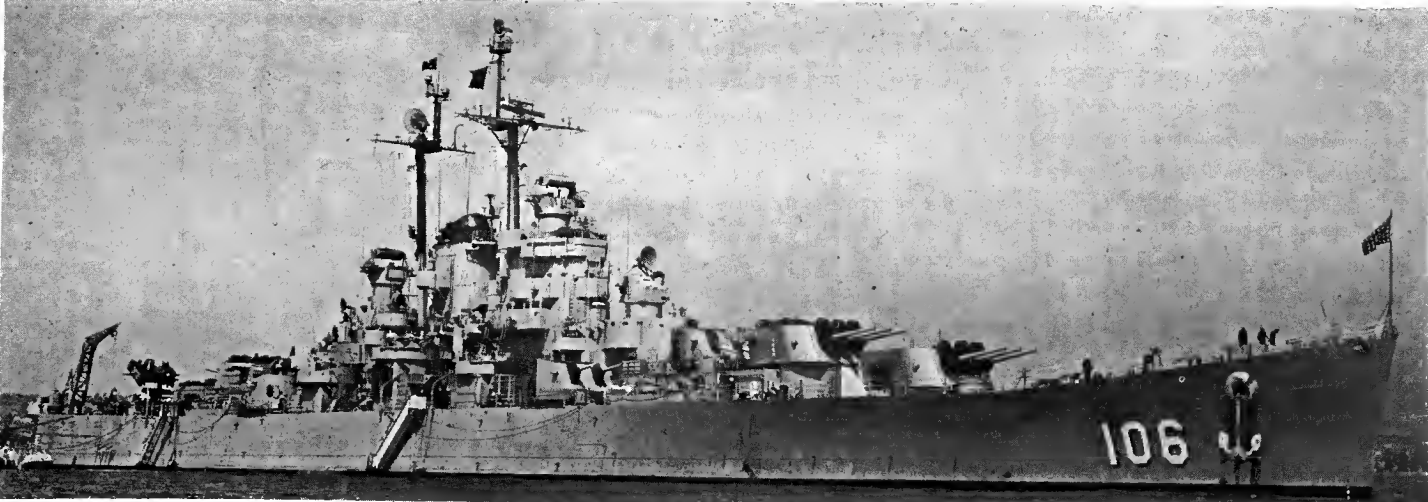
A modified version of the "Cleveland" type with single funnel and simplified superstructure to enlarge the area of fire of the anti-aircraft armament. In the Atlantic Reserve Fleet.

Name	No.	Builders	Laid down	Launched	Completed
FARGO	CL 106	New York Shipbuilding Corporation	23 Aug 1943	25 Feb 1945	9 Dec 1945



PHOTOGRAPHS. A large starboard bow oblique aerial view of *Fargo* appears in the 1958-59 and earlier editions, and starboard broadside aerial and starboard bow aerial views of *Huntington* in the 1959-60 edition.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.
DISPOSAL
Sister ship *Huntington* was stricken from the Navy List on 1 Sep 1962.



FARGO

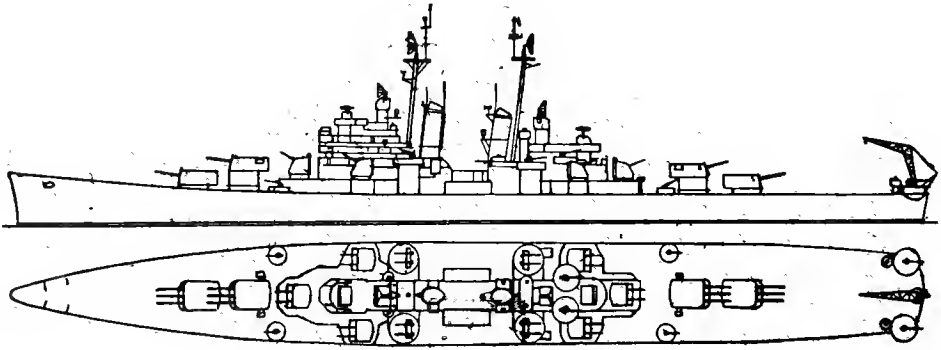
Marius Bar

Cruisers—continued

Name	No.	Builders	Laid down	Launched	Completed
WILKES-BARRE	CL 103	New York SB Corporation	14 Dec 1942	24 Dec 1943	1 July 1944
ATLANTA	IX 304 (ex-CL 104)	New York SB Corporation	25 Jan 1943	6 Feb 1944	3 Dec 1944
PASADENA	CL 65	Bethlehem Steel Co, Quincy	6 Feb 1943	28 Dec 1943	8 June 1944
ASTORIA	CL 90	Cramp Shipbuilding Co	6 Sep 1941	6 Mar 1943	17 May 1944
AMSTERDAM	CL 101	Newport News SB & DD	3 Mar 1943	25 Apr 1944	8 Jan 1945
PORTSMOUTH	CL 102	Newport News SB & DD	28 June 1943	20 Sep 1944	25 June 1945

Cruisers (CL)
6 "Cleveland" Class

Displacement, tons	10 500 standard; 13 755 full load
Length, feet (metres)	600 (182.9) wl; 610 (185.9) oa
Beam, feet (metres)	66 (20.1)
Draft, feet (metres)	25 (7.6)
Guns, surface	12—6 in (152 mm) 47 cal.
Guns, dual purpose	12—5 in (127 mm) 38 cal.
Guns, AA	24 to 28—40 mm; 19—20 mm
Armour	Sides 5—1.5 in (127—38 mm) decks 3 + 2 in (76 + 51 mm) gunhouses 5—3 in (127—68 mm)
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines 100 000 shp; 4 shafts
Speed, knots	33
Radius, miles	7 500 at 15 knots
Oil fuel (tons)	2 100
Complement	924 (54 officers, 870 men)
Accommodation	70 officers and 1 285 men



PHOTOGRAPHS. A starboard aerial view of *Birmingham*, a port bow view of *Oklahoma City* and four photographs of "Terrier" guided missiles appear in the 1957-58 edition, a port bow view of *Manchester* in the 1958-59 and earlier editions, a photograph of a "Talos" missile on its launcher in the Addenda of the 1958-59 edition, and a larger port broadside view of *Manchester* in the 1959-60 and 1960-61 edition.

RECLASSIFICATION. CLG 93 and CLs 92, 91, 82, 66 and 67 were reclassified as CLGs 3, 4, 5, 6, 7 and 8, respectively on 23 May 1957. (See previous page).

CONVERSION. In addition to those converted and redesignated CLG it was originally intended that *Vincennes* (CL 64), *Astoria* (CL 90), *Amsterdam* (CL101) and *Atlanta* (CL 104) would eventually be converted to guided missile cruisers (CLG). Action was postponed on the conversion of a guided missile cruiser under the 1960 conversion programme, and no further guided missile conversions will be undertaken in view of the problems involved and newer ships which will be nuclear powered.

DRAWING. Port elevation and plan of original "Cleveland" class. Scale 128 feet = 1 inch.

CLASS. *Galveston*, *Little Rock*, *Oklahoma City*, *Providence*, *Springfield* and *Topeka* of this class were converted into guided missile light cruisers (see previous page).

NOMENCLATURE. One of the above ships was originally allocated another name.—*Astoria* (ex-*Wilkes-Barre*).

DISPOSALS
Of the "Cleveland" class, *Birmingham*, CL 62, *Cleveland*, CL 55, *Columbia*, CL 56, *Denver*, CL 58, *Houston*, CL 81, *Mobile*, CL 63, *Montpelier*, CL 57 and *Santa Fe*, CL 60, were scrapped in 1959 (stricken from the Navy List on 1 Mar 1959). *Duluth*, CL 87 was stricken on 1 Jan 1960 and *Manchester*, CL 83, at the end of 1960. *Biloxi*, CL 80, *Dayton*, CL 105, and *Miami*, CL 89, were stricken on 1 Sep 1961. *Atlanta*, CL 104, and *Vicksburg*, CL 86, were stricken on 1 Oct 1962, but *Atlanta* was reinstated as IX-304 on 15 May 1964 to be used in support of Pacific experiments, see photograph below. *Vincennes*, CL 64, was stricken on 1 Apr 1966.

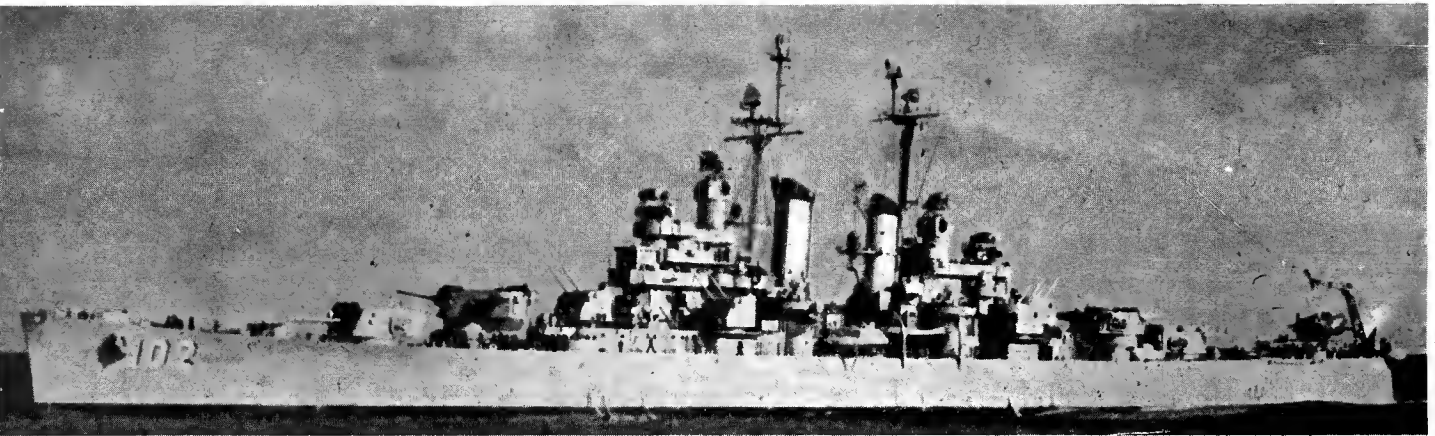
With 36 units (excluding *Youngstown*, CL 94, cancelled on 11 Aug 1945 when 55 per cent complete), this was numerically the largest group of cruisers of a single design ever put in hand. 27 were completed as cruisers, but nine originally ordered from New York Shipbuilding Corporation were converted into aircraft carriers of the "Independence" class. All the survivors of the "Cleveland" class (which originally carried 3 aircraft launched from two catapults) are out of commission except those converted into guided missile cruisers. (See names of stricken ships of this class under *Disposals* below).

APPEARANCE. The first seven ships (CL 55, 56, 57, 58, 60, 62, 63) had round bridge fronts. The remaining six cruisers of this class have a rectangular pilot house with a walk around the front.



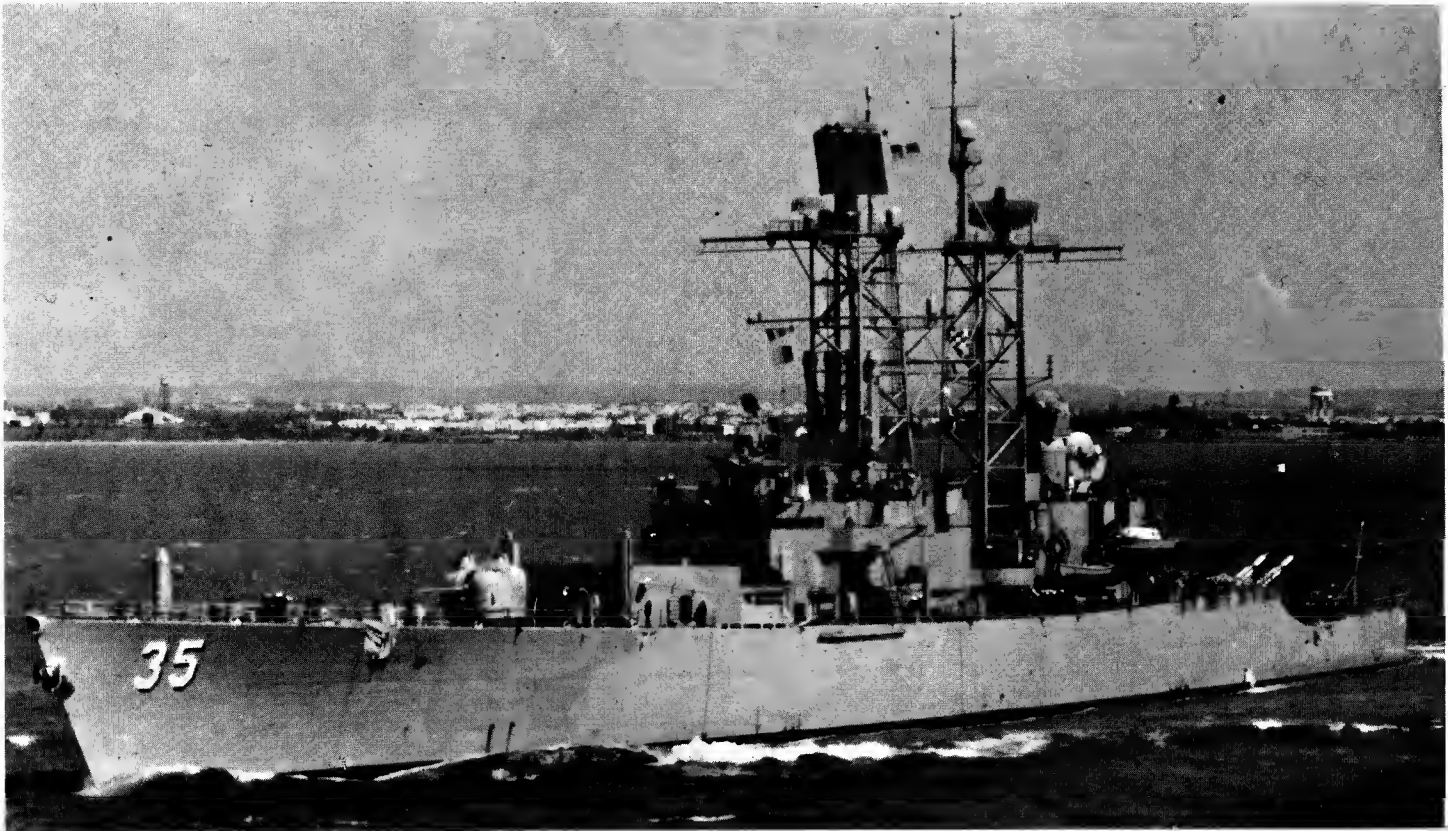
ATLANTA

1965, United States Navy, Official



PORTSMOUTH

United States Navy, Official



TRUXTUN (new nuclear powered guided missile frigate, see adjacent data)

1967

SONAR TEST SHIP (Converted Anti-Aircraft Light Cruiser, CLAA)

Name	No.	Builders	Laid down	Launched	Completed	Converted
SPOKANE	T-AG 191 (ex-CLAA 120)	Federal SB & DD Co, Kearny	15 Nov 1944	22 Sep 1945	17 May 1946	1966-1967

1 "Juneau" Class

Displacement, tons	6 000 standard; 8 200 full load
Length, feet (metres)	541 (164.9)
Beam, feet (metres)	53 (16.2)
Draft, feet (metres)	25 (7.9)
Armour	Sides 3.5 in (89 mm); deck 2 in (51 mm)
Boilers	4 Babcock & Wilcox
Main engines	Westinghouse geared turbines 75 000 shp; 2 shafts
Speed, knots	32
Radius, miles	7 500 at 15 knots
Oil fuel (tons)	1 450
Complement	579 (as cruiser)
Accommodation	63 officers and 785 men

Originally rated as a light cruiser (CL) but built as an anti-aircraft cruiser (CLAA). The bridges are armoured.

CONVERSION. *Spokane* is undergoing major conversion to adapt her as Sonar Test Ship. Bow rebuilt. Reclassified T-AG 191 on 1 Apr 1966. Scheduled for service in Nov 1967 with Military Sea Transportation Service crew, as a special project ship.

GUNNERY. During conversion the former armament of twelve 5 inch, 38 cal dual purpose guns and 32 40 mm AA guns were removed.



(guns now removed)

United States Navy, Official

DISPOSALS
Of this class, *San Diego*, CLAA 53, *San Juan*, CLAA 54, *Fresno*, CLAA 121, on 1 Apr 1965, *Flint*, CLAA 97, on 1 Sep 1965, and *Tucson*, CLAA 98, on 1 June 1966.



SPOKANE (now being rebuilt as Sonar Test Ship)

Added 1965, United States Navy, Official

NUCLEAR POWERED GUIDED MISSILE ARMED DESTROYER LEADERS (DLGN)

Name	No.	Builders	Laid down	Launched	Completed
TRUXTUN	DLGN 35	New York Shipbuilding Corpn. Camden, NJ	17 June 1963	19 Dec 1964	27 May 1967

Officially Rated as Nuclear Powered Guided Missile Frigates (DLGN)

1 + 3 New Construction

Displacement, tons	8 200 standard; 9 200 full load
Length, feet (metres)	564 (171.9)
Beam, feet (metres)	58 (17.7)
Draft, feet (metres)	31 (9.4) max
Aircraft	DAS helicopter

Missiles, AA and A/S	Combined "Terrier/Asroc" twin launcher aft
Guns, dual purpose	1—5 in (127 mm) 54 cal forward
Guns, AA	2—3 in (76 mm) 50 cal single amidships
Torpedo tubes	2—21 in (533 mm) singles; 6—12 in (305 mm), 2 triples, for A/S homing torpedoes

Nuclear reactors	2 D2G
Main engines	Geared turbines, 2 shafts, 60 000 shp
Speed, knots	30
Complement	479 (27 officers, 452 men)
Accommodation	36 officers and 465 men

Truxtun was requested in the Fiscal Year 1962 Shipbuilding Programme. The contract was awarded to the New York Shipbuilding Corporation, Camden, NJ in June 1962. Estimated final cost \$134 900 000. Basically similar to Bainbridge but with some major equipment improvements, helicopter landing platform and hangar, and bow mounted long range sonar. Navy Tactical Data System, and 3 co-ordinate radar. The six torpedo tubes

in two triple nests are of 12 inch diameter and are essentially anti-submarine weapons. Truxtun was originally scheduled to have been commissioned for service in Mar 1966 (official estimate), and to have been deployed in the Pacific Fleet in 1966 but the revised official estimate for commissioning was 27 May 1967. (See photograph on previous page). Another nuclear powered guided missile frigate was requested in the Fiscal year 1966 New-Construction programme, but was deferred to Fiscal Year 1967.

NEW CONSTRUCTION DLGN 36 (FY 1967): Advance specifications call for: 10 150 tons full load displacement, 596 feet overall length, 61 feet beam, two dual "Tartar" SAM systems for AAW and ASW, one forward and one aft, two 5-inch gun mountings, one forward and one aft. Two more DLGN voted in FY 1968.

RESCINDMENT

The nuclear powered guided missile frigate (DLGN) requested in the Fiscal Year 1963 New Construction Programme was not authorised because the "Typhon" system was not available, and there are no longer plans for this particular design of DLGN, since the "Typhon" project has been cancelled as being too large and complex for full reliability. The ship would have been the

largest vessel in the broad, and now practically merging, destroyer-frigate category ever designed. She would have had a full load displacement of well over 9 000 tons with an overall length exceeding 600 feet and armed with a twin launcher for long range "Typhon" missiles, two single launchers for short range, "Typhon" system missiles, giving her long range and medium range

surface-to-air, surface-to-surface, and surface-to-missile capability; two triple tube anti-submarine torpedo launchers. ASROC and DASH, two 5-inch dual purpose singly mounted guns, long range sonar, homing and wire-guided torpedoes, and NTDS (Naval Tactical Data System). An official United States Navy artist's impression of this project appeared in the 1962-63 edition.

Officially Rated as Nuclear Powered Guided Missile Frigate (DLGN)

Name	No.	Builders	Laid down	Launched	Commissioned
BAINBRIDGE	DLGN 25	Bethlehem Steel Co. Quincy	15 May 1959	15 Apr 1961	6 Oct 1962

Displacement, tons	7 600 standard; 8 580 full load
Length, feet (metres)	540 (164.6) pp; 550 (167.6) wl; 564 (171.9) oa
Beam, feet (metres)	56 (17.1) wl; 57.9 (17.6) max
Draft, feet (metres)	.26 (7.9) max
Missiles, AA	2 Advanced "Terrier" twin launchers fore and aft
A/S	"Asroc" launcher forward
Guns, AA	4—3 in (76 mm) 50 cal., 2 twin amidships
Torpedo tubes	6 tubes, 2 triples, for A/S torpedoes
Nuclear reactors	2 GE type D2G pressurised water-cooled
Main engines	Geared turbines 60 000 shp; 2 shafts
Speed, knots	30
Radius, miles	150 000 at full power 450 000 at 20 knots
Complement	451 (26 officers, 425 men)
Accommodation	34 officers and 465 men



BAINBRIDGE

1963, United States Navy, Official

Provided under the Fiscal Year 1959 new construction programme. First nuclear powered warship of the destroyer type ever built in the world. \$35 000 000 appropriated for the nuclear power plant and \$10 000 000 for early work on design and hull. Final cost \$163 200 000. (\$87 000 000 was paid to the builders, Bethlehem Steel. The remainder was for Government furnished material). The design light displacement was 6 500 tons. She was delivered to the Navy in Nov 1962. Fitted with NTDS. She mounts all the weapons and equipment of a conventionally powered guided missile frigate in a slightly bigger hull. She is bigger than a light cruiser of the "Juneau" class. Allocated to the Pacific Fleet in Oct 1965.

ENGINEERING. The nuclear power plant was built by the General Electric Co, West Milton, NY. The ship has a much greater cruising range at sustained high speeds than conventionally powered frigates. The use of nuclear propulsion gives her many advantages. Some of these are the tactical flexibility of steaming at high speeds for long periods without the necessity for refuelling and the elimination of smoke stacks and air intakes for blowers (fans), providing greater protection for personnel against the danger of atomic fall-out.

The elimination of smoke stacks permits the use of better radar and communication antennae located for optimum performance and free from the deteriorating effects of stack fumes..

GUIDED MISSILES. The ship carries, or has a capacity of, 80 guided missiles.

NOMENCLATURE. Named after Commodore William Bainbridge, hero of the Tripoli War and the War of 1812.



BAINBRIDGE. World's first nuclear powered guided missile frigate, on initial trials

1962, United States Navy, Official

GUIDED MISSILE ARMED DESTROYER LEADERS (DLG)

Officially Rated as
Guided Missile Frigates
9 "Belknap" Class

Name	No.	Builders	Laid down	Launched	Completed
BELKNAP	DLG 26	Bath Iron Works Corp	5 Feb 1962	20 July 1963	7 Nov 1964
JOSEPHUS DANIELS	DLG 27	Bath Iron Works Corp	23 Apr 1962	2 Dec 1963	8 May 1965
WAINWRIGHT	DLG 28	Bath Iron Works Corp	2 July 1962	25 Apr 1964	8 Jan 1966
JOUETT	DLG 29	Puget Sound Naval Yard	25 Sep 1962	30 June 1964	3 Dec 1966
HORNE	DLG 30	San Francisco Naval Yard	12 Dec 1962	30 Oct 1964	15 Apr 1967
STERETT	DLG 31	Puget Sound Naval Yard	25 Sep 1962	30 June 1964	8 Apr 1967
WILLIAM H. STANDLEY	DLG 32	Bath Iron Works Corp	29 July 1963	19 Dec 1964	9 July 1966
FOX	DLG 33	Todd Shipyard Corp	15 Jan 1963	21 Nov 1964	28 May 1966
BIDDLE	DLG 34	Bath Iron Works Corp	9 Dec 1963	2 July 1965	21 Jan 1967

Displacement, tons 6 570 standard; 8 150 full load
Length, feet (metres) 547 (166.7)
Beam, feet (metres) 54.8 (16.7)
Draft, feet (metres) 28 (8.5) max
Aircraft DASH
Missiles, AA and A/S Combined "Terrier/Asroc" twin launcher forward
Guns, dual purpose 1—5 in (127 mm) 54 cal. aft
Guns, AA 2—3 in (76 mm) 50 cal. single amidships
Torpedo tubes 2—21 in (533 mm) singles; 6 tubes, 2 triple, for A/S torpedoes
Boilers 4
Main engines Geared turbines
85 000 shp; 2 shafts
Speed, knots 31
Complement 395 (22 officers, 373 men)
Accommodation 420 (31 officers, 389 men)

El buque dispone de hangar y plataforma para DASH

Provided for under the Fiscal Year 1961 (first three) and 1962 (other six) building programmes. Helicopter platform aft. Anti-submarine warfare helicopters, and long range radar and sonar. Fitted with NTDS.

ENGINEERING. All these ships are conventionally powered. The boilers work at steam conditions of 1 200 lbs per sq in. pressure and a temperature of 970 deg F of superheat.

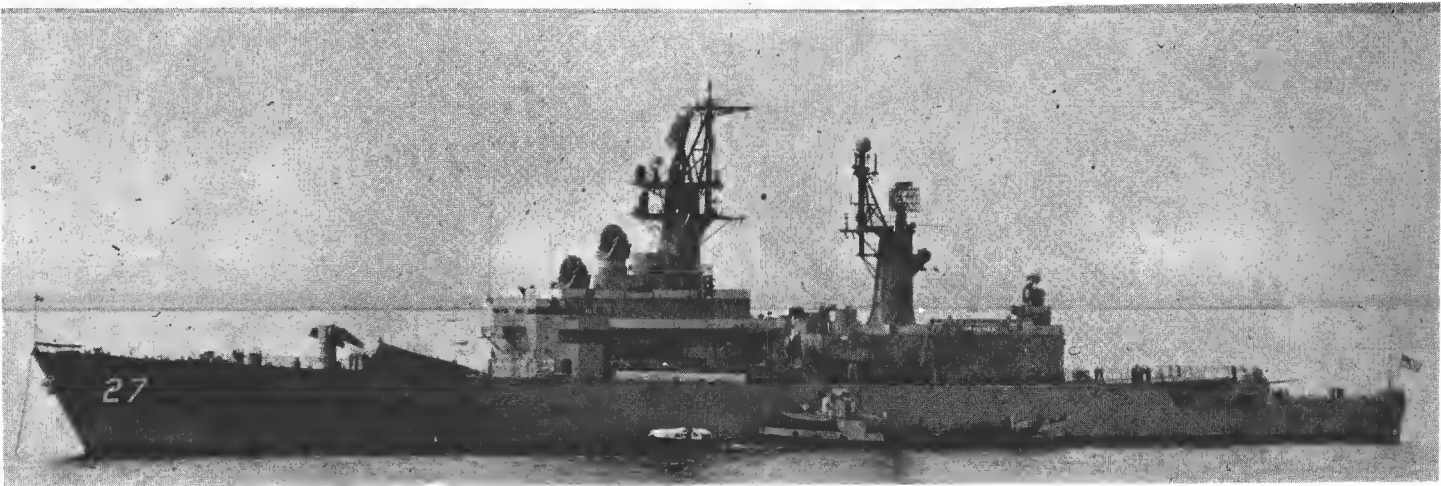
SONAR. Belknap has SQS-26 sonar similar to that in the new nuclear powered guided missile frigate Truxtun.

PHOTOGRAPHS. A port quarter view of Belknap appears in the 1965-66 and 1966-67 editions.



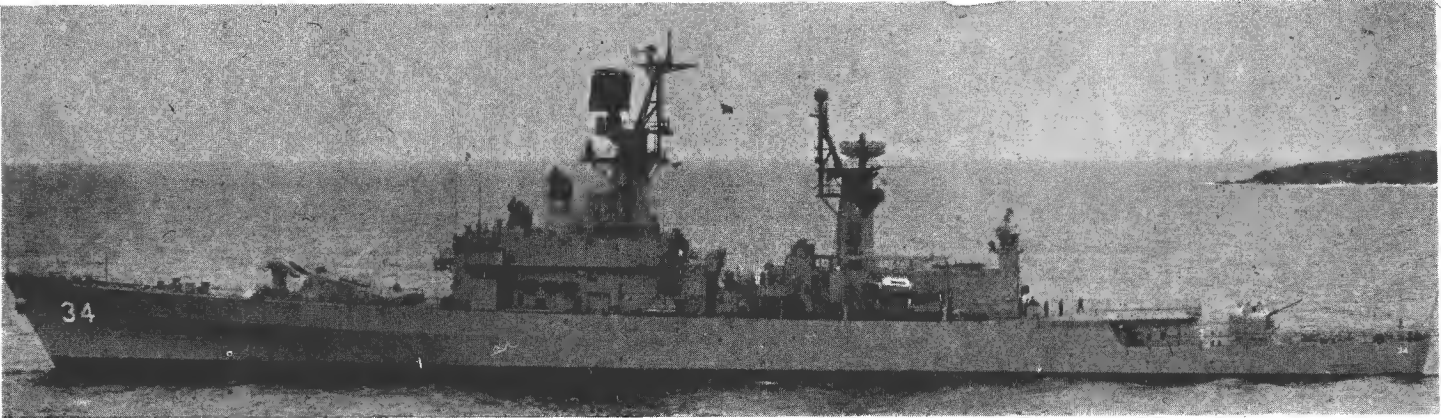
BELKNAP

1967, United States Navy, Official



JOSEPHUS DANIELS

1967, courtesy Dr Aldo Fraccaroli



BIDDLE

1967, Official

Guided Missile Armed Destroyer Leaders—continued

9 "Leahy" Class

Displacement, tons	5 670 standard; 7 800 full load
Length, feet (metres)	533 (162.5) oa
Beam, feet (metres)	53.5 (16.3)
Draft, feet (metres)	19 (5.8)
Missiles, AA	2 twin "Terrier" launchers, fore and aft
A/S	"Asroc" launcher
Guns, AA	4—3 in (76 mm) 50 cal., 2 twin
Torpedo tubes	6 for A/S torpedoes, 2 triple
Boilers	4 Babcock & Wilcox—DLG 16, 17, 18; 4 Foster Wheeler in remainder
Main engines	Geared turbines (see <i>Engineering</i>)
	85 000 shp; 2 shafts
Speed, knots	34
Complement	372 (22 officers, 350 men)
Accommodation	396 (31 officers, 365 men)

Very large guided missile destroyer leaders or frigates approaching the light cruiser category. The design is an improvement on that of the "Coontz" class. DLG 16, DLG 17 and DLG 18 were provided for under the Fiscal Year 1958 Programme and DLG 19, DLG 20, DLG 21, DLG 22, DLG 23 and DLG 24 under the Fiscal Year 1959 Programme. *Halsey* and *Reeves* are of a different scheme. Fitted with the Naval Tactical Data System (NTDS).

CONSTRUCTION. These nine guided missile frigates were a new class with *Leahy* as the prototype. They are larger than the "Coontz" class and mount "Terrier" launchers fore and aft, also conventional weapons, and carry long range sonar and long and short range anti-submarine weapons. All are conventionally powered. They have "macks" in place of masts and stacks. All equipped with helo platform aft.

ENGINEERING. *Halsey* and *Reeves* have two sets of Allis-Chalmers-Falk geared turbines, *Leahy*, *Harry E. Yarnell*, *Worden* and *Dale* have General Electric, and *Richmond K. Turner*, *Gridley* and *England* have De Laval.

PHOTOGRAPHS. A port bow view of *Leahy* appears in the 1962-63 to 1964-65 editions, and a starboard bow view in the 1963-64 edition, and a port bow view of *Harry E Yarnell* in the 1963-64 to 1965-66 editions.

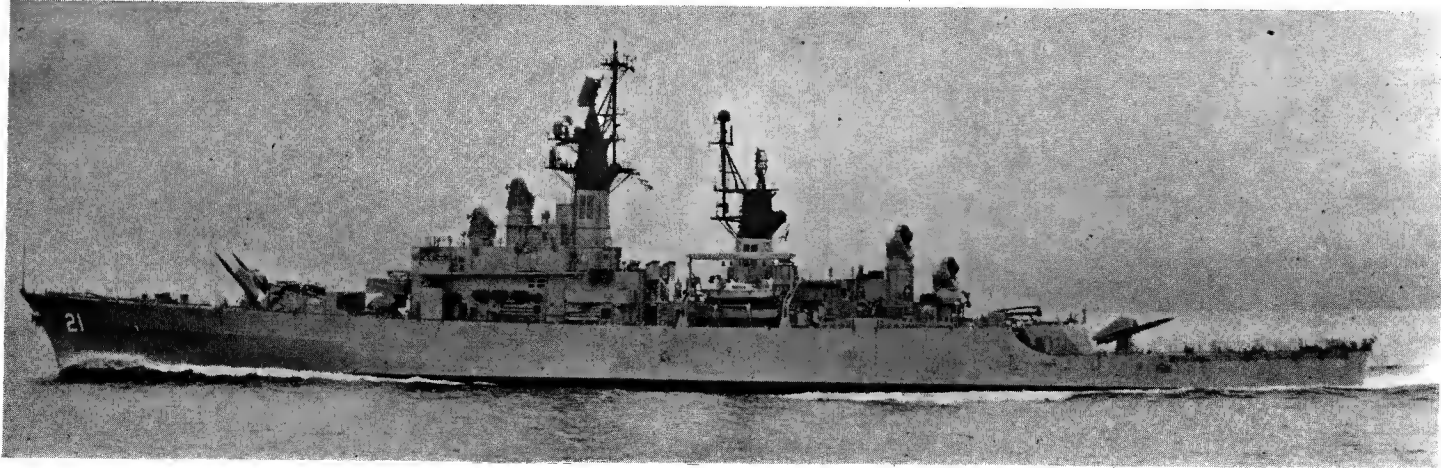
Name	No.	Builders	Laid down	Launched	Completed
LEAHY	DLG 16	Bath Iron Works Corp	3 Dec 1959	1 July 1961	4 Aug 1962
HARRY E. YARNELL	DLG 17	Bath Iron Works Corp	31 May 1960	9 Dec 1961	2 Feb 1963
WORDEN	DLG 18	Bath Iron Works Corp	19 Sep 1960	2 June 1962	3 Aug 1963
DALE	DLG 19	New York SB Corp	6 Sep 1960	28 July 1962	2 Nov 1963
RICHMOND K. TURNER	DLG 20	New York SB Corp	9 Jan 1961	6 Apr 1963	28 May 1964
GRIDLEY	DLG 21	Puget Sound B & D Co	15 July 1960	31 July 1961	25 May 1963
ENGLAND	DLG 22	Todd Shipyards Corp	4 Oct 1960	6 Mar 1962	7 Dec 1963
HALSEY	DLG 23	San Francisco Naval Yard	26 Aug 1960	15 Jan 1962	20 July 1963
REEVES	DLG 24	Puget Sound Naval Yard	1 July 1960	12 May 1962	16 May 1964



LEAHY

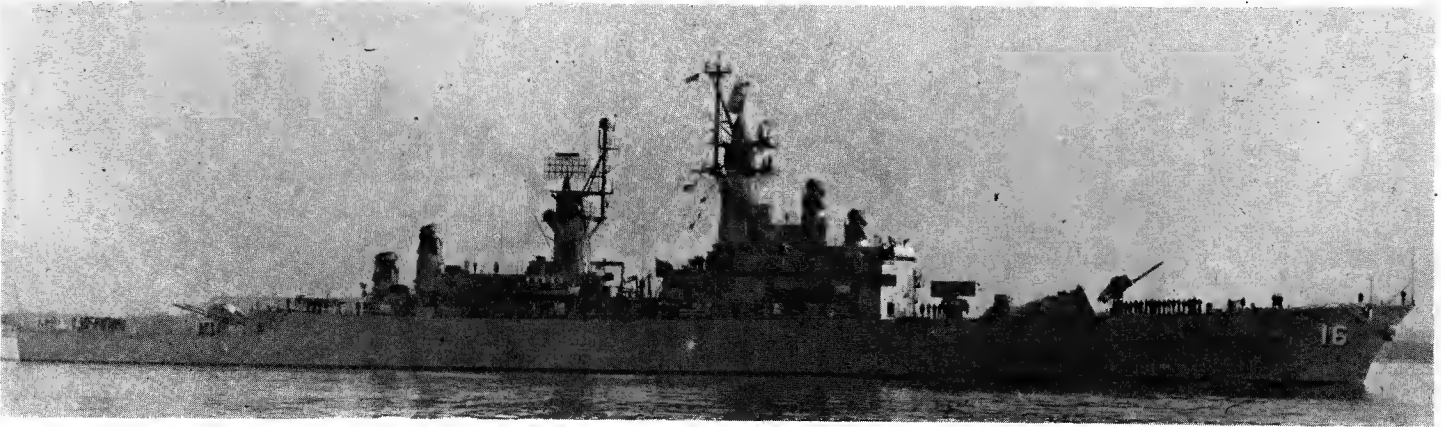
1966, direct from Commanding Officer, USS Leahy

CONVERSION. *Leahy* was converted to AAW under the 1966 programme (three dimensional search radars, NTDS), and *Harry E. Yarnell*, *Worden*, *Gridley* and *Reeves* are in the Fiscal Year 1967 Conversion Programme.



GRIDLEY

1965, United States Navy, Official



LEAHY

1967, Official

Guided Missile Armed Destroyer Leaders—continued

Officially Rated as
Guided Missile Frigates (DGL) —
continued

10 "Coontz" Class

Displacement, tons	4 700 standard; 5 800 full load
Length, feet (metres)	512.5 (156.2) wl; 520 (158.5) oa
Beam, feet (metres)	52.3 (15.9)
Draft, feet (metres)	18 (5.5) keel
Missiles, AA	1 "Terrier III" twin launcher aft; 40 missiles carried
A/S	"Asroc" 8-tube "Pepperbox" launcher
Guns, dual purpose	1—5 in (127 mm) 54 cal. forward
Guns, AA	4—3 in (76 mm) 50 cal. in twin mounts amidships
Torpedo tubes	6 fixed launchers, 2 triple, for A/S torpedoes
Boilers	4, pressure 1 200 psi (84.4 kg/cm ²) superheat 970°F (520°C)
Main engines	2 sets geared turbines (see Engineering notes) 85 000 shp; 2 shafts
Speed, knots	34
Complement	355 (20 officers, 335 men)
Accommodation	28 officers and 350 men

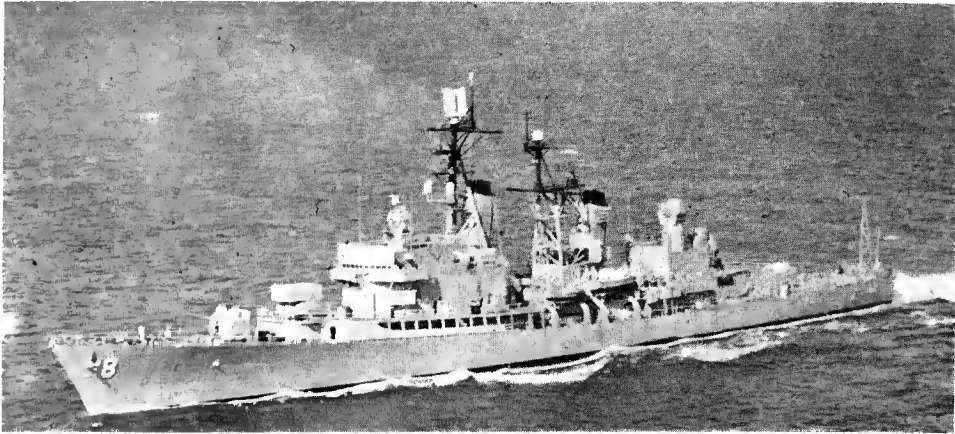
Guided missile ships of the destroyer leader or large frigate category. Improved versions of the original destroyer leaders (afterwards re-rated as frigates) of the "Mitscher" type. Designed to destroy air targets. These ships also have anti-submarine and early warning capabilities. They were intended primarily as anti-aircraft and anti-submarine warfare ships. They can also screen high speed task forces, support amphibious operations and are capable of operating independently. The light displacement was officially stated to be 3 900 tons. Dewey was the first ship equipped with the advanced "Terrier" missile, which superseded the original "Terrier" in service in the Fleet since Jan 1956. Coontz, Farragut, King, Luce, Macdonough and Mahan were provided for under the Fiscal Year 1956 programme appropriations; Dahlgren, William V. Pratt, Dewey and Preble under the 1957 FY programme. Cost \$51 000 000 each. King and Mahan are equipped with NTDS (Navy Tactical Data System).

ENGINEERING. Coontz, King, Mahan, Dahlgren, William V. Pratt and Dewey have two sets of Allis-Chalmers-Falk geared turbines of high speed and light weight developing 85 000 shaft horse power. Farragut, Luce, Macdonough and Preble have De Laval turbines of 85 000 shp.

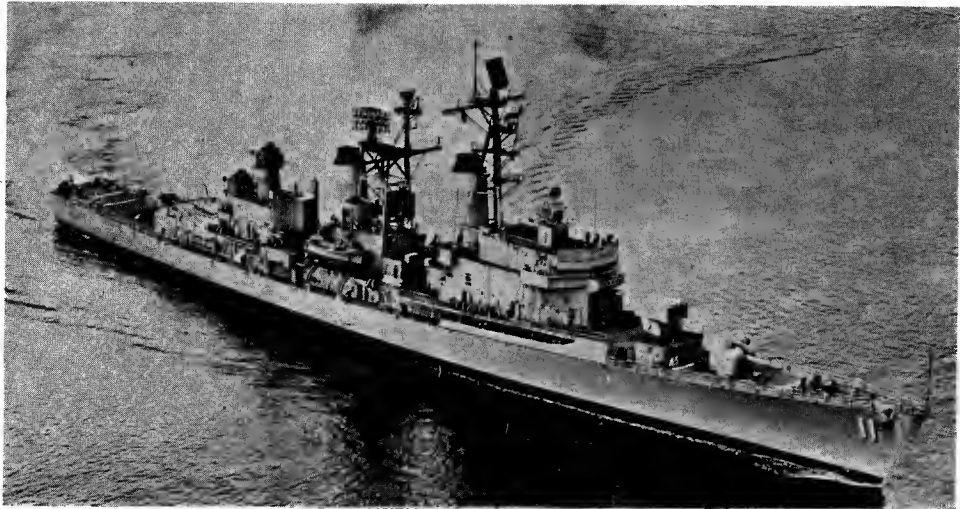
CONVERSION. Farragut is being converted to AAW under the 1966 programme and fitted with NTDS during the overhaul at Philadelphia Naval Shipyard, commencing in Feb 1968 and completing in 1969.

NOMENCLATURE. DLG 7, the ship which it was originally announced would be named Dewey, was renamed Luce in 1957.
PHOTOGRAPHS. A starboard broadside view of Dewey appears in the 1960-61 to 1963-64 editions, a starboard bow oblique view of King in the 1961-62, 1962-63 and 1964-65 editions, a starboard bow view of Dahlgren in the 1963-64 and 1964-65 editions, a starboard quarter oblique aerial view of Preble (showing "Terriers" aft, in "Y" position) in the 1961-62 to 1965-66 editions, and a port near broadside surface view of Dahlgren in the 1965-66 and 1966-67 editions.

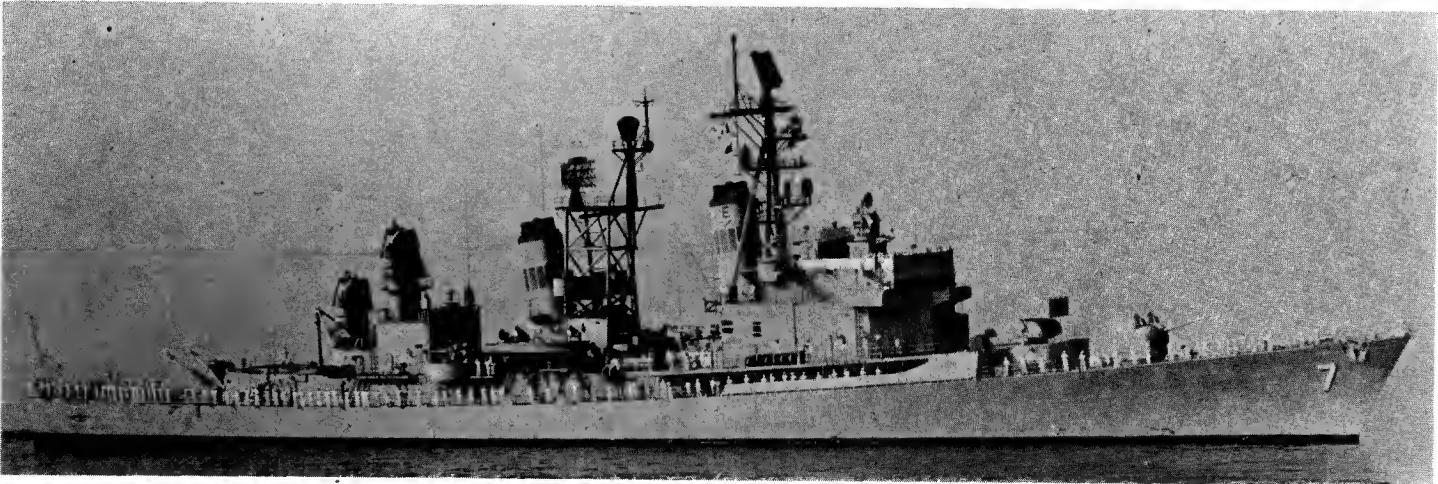
Name	No	Builders	Laid down	Launched	Completed
FARRAGUT	DLG 6	Bethlehem Co, Quincy	3 June 1967	18 July 1958	17 Feb 1961
LUCE	DLG 7	Bethlehem Co, Quincy	1 Oct 1957	11 Dec 1958	15 July 1961
MACDONOUGH	DLG 8	Bethlehem Co, Quincy	15 Apr 1958	9 July 1959	12 Jan 1962
COONTZ	DLG 9	Puget Sound Naval Yard	2 Mar 1957	6 Dec 1958	15 July 1960
KING	DLG 10	Puget Sound Naval Yard	2 Mar 1957	6 Dec 1958	17 Nov 1960
MAHAN	DLG 11	San Francisco Naval Yard	29 July 1957	7 Oct 1959	28 Nov 1960
DAHLGREN	DLG 12	Philadelphia Naval Yard	1 Mar 1958	16 Mar 1960	15 July 1961
WILLIAM V. PRATT	DLG 13	Philadelphia Naval Yard	1 Mar 1958	16 Mar 1960	30 Dec 1961
DEWEY	DLG 14	Bath Iron Works, Maine	10 Aug 1957	30 Nov 1958	7 Dec 1959
PREBLE	DLG 15	Bath Iron Works, Maine	16 Dec 1957	23 May 1959	9 May 1960



MACDONOUGH 1966, United States Navy, Official



MAHAN 1965, United States Navy, Official



LUCE 1967, courtesy Dr Giorgio Arra

GUIDED MISSILE ARMED DESTROYERS (DDG)

Name	No	Builders	Laid down	Launched	Completed
CHARLES F. ADAMS	DDG 2 (ex-DDG 952)	Bath Iron Works, Maine	16 June 1958	8 Sep 1959	10 Sep 1960
JOHN KING	DDG 3 (ex-DDG 953)	Bath Iron Works, Maine	25 Aug 1958	30 Jan 1960	21 Mar 1961
LAWRENCE	DDG 4 (ex-DDG 954)	New York Shipbuilding Corp	27 Oct 1958	27 Feb 1960	10 Feb 1962
CLAUDE V. RICKETTS (ex-Biddle)**	DDG 5 (ex-DDG 955)	New York Shipbuilding Corp	18 May 1959	4 June 1960	18 Aug 1962
BARNEY	DDG 6 (ex-DDG 956)	New York Shipbuilding Corp	10 Aug 1959	10 Dec 1960	25 Sep 1962
HENRY B. WILSON	DDG 7 (ex-DDG 957)	Defoe Shipbuilding Co, Mich	28 Feb 1958	22 Apr 1959	24 Feb 1961
LYNDE McCORMICK	DDG 8 (ex-DDG 958)	Defoe Shipbuilding Co, Mich	4 Apr 1958	28 July 1959	31 July 1961
TOWERS	DDG 9 (ex-DDG 959)	Todd Shipyards Inc, Seattle	1 Apr 1958	23 Apr 1959	20 July 1961
SAMPSON	DDG 10	Bath Iron Works, Maine	2 Mar 1959	21 May 1960	15 Aug 1961
SELLERS	DDG 11	Bath Iron Works, Maine	3 Aug 1959	9 Sep 1960	18 Jan 1962
ROBISON	DDG 12	Defoe Shipbuilding Co, Mich	28 Apr 1959	27 Apr 1960	29 Jan 1962
HOEL	DDG 13	Defoe Shipbuilding Co, Mich	3 Aug 1959	4 Aug 1960	31 July 1962
BUCHANAN	DDG 14	Todd Shipyards Inc, Seattle	23 Apr 1959	11 May 1960	23 Mar 1962
BERKELEY	DDG 15	New York Shipbuilding Corp	29 Aug 1960	29 July 1961	15 Dec 1962
JOSEPH STRAUSS	DDG 16	New York Shipbuilding Corp	27 Dec 1960	9 Dec 1961	20 Apr 1963
CONYNGHAM	DDG 17	New York Shipbuilding Corp	1 May 1961	19 May 1962	13 July 1963
SEMMES	DDG 18	Avondale Marine Ways Inc, NO	18 Aug 1960	20 May 1961	10 Dec 1962
TATTNALL	DDG 19	Avondale Marine Ways Inc, NO	14 Nov 1960	26 Aug 1961	13 Apr 1963
GOLDSBOROUGH	DDG 20	Puget Sound B & DD Co	3 Jan 1961	15 Dec 1961	9 Nov 1963
COCHRANE	DDG 21	Puget Sound B & DD Co, Seattle	31 July 1961	18 July 1962	21 Mar 1964
BENJAMIN STODDERT	DDG 22	Puget Sound B & DD Co, Seattle	11 June 1962	8 Jan 1963	12 Sep 1964
RICHARD E. BYRD	DDG 23	Todd Shipyards Inc, Seattle	12 Apr 1961	6 Feb 1962	7 Mar 1964
WADDELL	DDG 24	Todd Shipyards Inc, Seattle	6 Feb 1962	26 Feb 1963	28 Aug 1964

23 "Charles F. Adams" Class

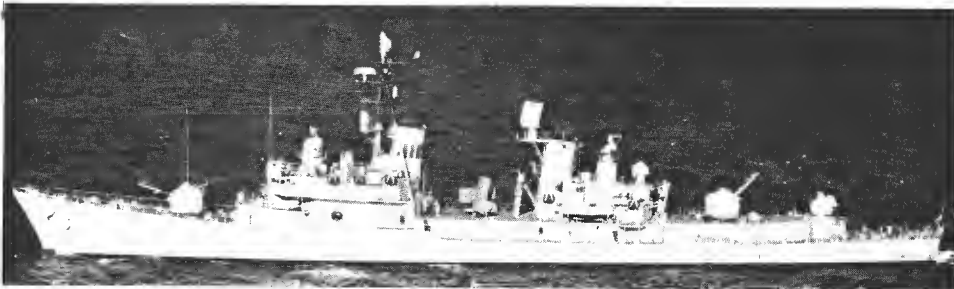
Displacement, tons	3 370 standard; 4 500 full load
Length, feet (metres)	431 (131.4) wl; 437 (133.2) wl
Beam, feet (metres)	47 (14.3)
Draft, feet (metres)	20 (6.1)
Missiles, AA	Charles F. Adams group DDG2 to 14:—Twin "Tartar" launcher "Berkeley" group, DDG15 to 24:—single "Tartar" launcher "Asroc" launcher
A/S	2—5 in (127 mm) 56 cal. single
Guns, dual purpose	Torpedo tubes 2 triple launchers for A/S torpedoes
Boilers	4
Main engines	Geared steam turbines 70 000 shp; 2 shafts
Speed, knots	35
Complement	333 (18 officers, 315 men)
Accommodation	24 officers and 333 men

DDG 2—9 were provided under the Fiscal Year 1957 Appropriations, DDG 10-14 in 1958, DDG 15-19 in 1959, DDG 20-22 in 1960, and DDG 23, 24 under the 1961 programme. They are equipped to launch the "Tartar" surface-to-air missile with a range of 10 to 20 miles. In addition they are equipped with the latest in long range anti-submarine warfare weapons. As compared with previous destroyers, the ships have greater length overall, more beam and heavier displacement. They have a new hull design which is an evolution of the "Forrest Sherman" (DD 931) type and, like the "Forrest Sherman" class, have aluminium superstructure. The most recent habitability improvements have been incorporated into their construction, including air conditioning of all living spaces. Cost about: \$17 000 000 to \$18 000 000 each (with missiles and electronics \$34 000 000 each).

ENGINEERING. Charles F. Adams, John King, Henry B. Wilson and Lynde McCormick have GE steam turbines and electric generators.

GUNNERY. The original design provided for two 5 inch guns, one forward in "A" position and one aft in "Y" position (anti-submarine weapons in "B" position and guided weapons in "X" position) but the after ("Y") 5 inch gun was suppressed in favour of a guided missile launcher, and re-sited in "Y" position.

NOMENCLATURE. **Biddle was renamed Claude V. Ricketts on 28 July 1964.



LYNDE McCORMICK

1965, United States Navy, Official



GOLDSBOROUGH

1964, courtesy Mr J. C. Jeremy

GUIDED MISSILES. "Tartar" weapons are smaller than "Terrier" missiles. 42 missiles are carried. Missiles are 15 feet long and 1 foot in diameter. Twin launchers in first group (DDG 2-14), see photographs of Claude V. Ricketts and Lynde McCormick, single in second group (DDG 15-24), see photograph of Goldsborough.

CLASS. DDG 25, DDG 26 and DDG 27 were built by Defoe Shipbuilding Co, Bay City, Michigan, for the Royal Australian Navy, (DDG 27 awarded in Feb 1964). DDG 28, DDG 29, and DDG 30 are being built by Bath Iron Works, Maine, for the Federal German Navy at a cost of \$43 754 000.

ANTI-SUBMARINE. Goldsborough, Cochrane, Benjamin Stoddert, Richard E. Byrd and Waddell have bow mounted long range sonar.

PHOTOGRAPHS. A large starboard bow surface view of Charles F. Adams, and a port bow oblique aerial view of John King appear in the 1961-62 and 1962-63 editions, a starboard quarter surface view of John King in the 1963-64 edition, starboard bow aerial view of Henry B. Wilson in the 1961-62 to 1963-64 editions, a starboard broadside surface view of Berkeley in the 1963-64 and 1964-65 editions, and a starboard quarter oblique view of Claude V. Ricketts in the 1964-65 edition.



CLAUDE V. RICKETTS

1965, Captain Aldo Fraccoroli

DESTROYER LEADERS (DL) Conversion to Destroyers (DDG)

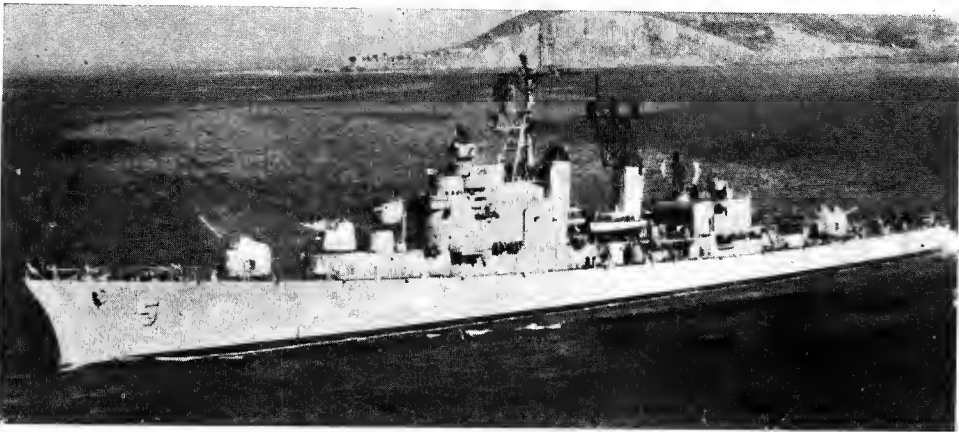
Name
MITSCHER DDG 35 (ex-DL 2, ex-DD 927)
JOHN S. MCCAIN (DDG 36 ex-DL 3, ex-DD 928)
WILLIS A. LEE, DL 4, (ex-DD 929)
WILKINSON, DL 5, (ex-DD 930)

Builders	Laid down	Launched	Completed
Bath Iron Works Corpn, Maine	3 Oct 1949	26 Jan 1952	16 May 1953
Bath Iron Works Corpn, Maine	24 Oct 1949	12 July 1952	12 Oct 1953
Bethlehem Steel Co, Quincy	1 Nov 1949	26 Jan 1952	28 Sep 1954
Bethlehem Steel Co, Quincy	1 Feb 1950	23 Apr 1952	29 July 1954

4 "Mitscher" Class

Displacement, tons	3 675 standard; 4 730 full load
Length, feet (metres)	450 (137.2) pp; 494 (150.7) oa
Beam, feet (metres)	50 (15.2)
Draft, feet (metres)	26 (7.9)
Missiles, AA	"Tartar" launcher (as converted)
A/S	"Asroc" launcher (as converted)
	1—Mk 108 rocket launcher (weapon "Alpha"); 1 DCT
Guns, dual purpose	2—5 in (127 mm) 54 cal. single
Guns, AA	2—3 in (76 mm) twin
Torpedo tubes	4—21 in (533 mm) fixed; 2 triple for A/S torpedoes
Boilers	DDG 35, 36: 4 controlled circulation type; 1 225 psi (86.1 kg/cm ²) 950°F (510°C)
	DDG 37, 38: 4 Foster Wheeler 2-drum type; 1 200 psi (84.4 kg/cm ²), 965°F (518°C)
Main engines	DDG 35, 36: 2 GE geared turbines; DDG 37, 38: 2 Westinghouse
	80 000 shp; 2 shafts
Speed, knots	35
Complement	339 (19 officers, 320 men)
Accommodation	30 officers and 350 men

Began as Destroyers (DD) but re-rated as Destroyer Leaders (DL) while building in 1951 and again re-rated as Frigates (DL) on 1 Jan 1955. They were then the largest destroyers ever built in the United States and in the world. Of a new design specifically constructed as a long-range fleet type for both administrative and anti-submarine duties. All ordered on 3 Aug 1948. Named after United States Admirals of the Second World War. Used as destroyer squadron flagships. *Wilkinson* and *Willis A. Lee* are fitted with bow-mounted sonar in new 70-ft bow section. Masts have been rerigged in all units with the crows' nest removed and replaced by "Tacan" dome.



WILKINSON

1964 United States Navy, Official

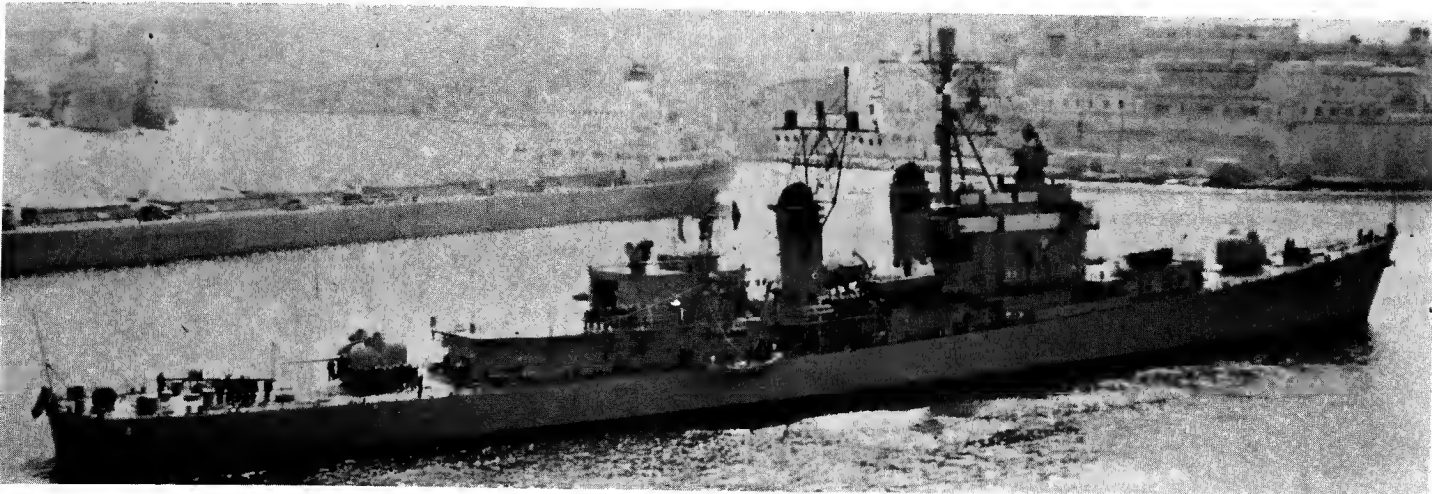
GUNNERY. The 5 inch guns are fully automatic loading, rapid fire, radar controlled. Newer longer range 3 inch, 70 cal mountings were installed in 1957-58 in place of the former 3 inch, 50 cal guns. The after 3 inch, 70 cal twin mounting and the four 20 mm AA (twin) guns were removed for a helo platform in all ships (see *Helicopter* notes).

CONVERSION. *Mitscher* and *John S. McCain* are being converted into guided missile armed destroyers DDG 35 and DDG 36 at Philadelphia Naval Shipyard under the Fiscal Year 1964 Conversion Programme, with "Tartar" missile launcher and ASROC anti-submarine rocket launcher, and were reclassified as DDG on 15 Mar 1967. All ships of the class will eventually be converted.

HELICOPTER OPERATION. *John S. McCain*, *Mitscher* and *Wilkinson* completed the DASH installation in Apr 1960, and *Willis A. Lee* later, including the removal of the after 3 inch guns to make way for a 50 x 30 ft landing pad and hangar for 2 drone anti-submarine helicopters.

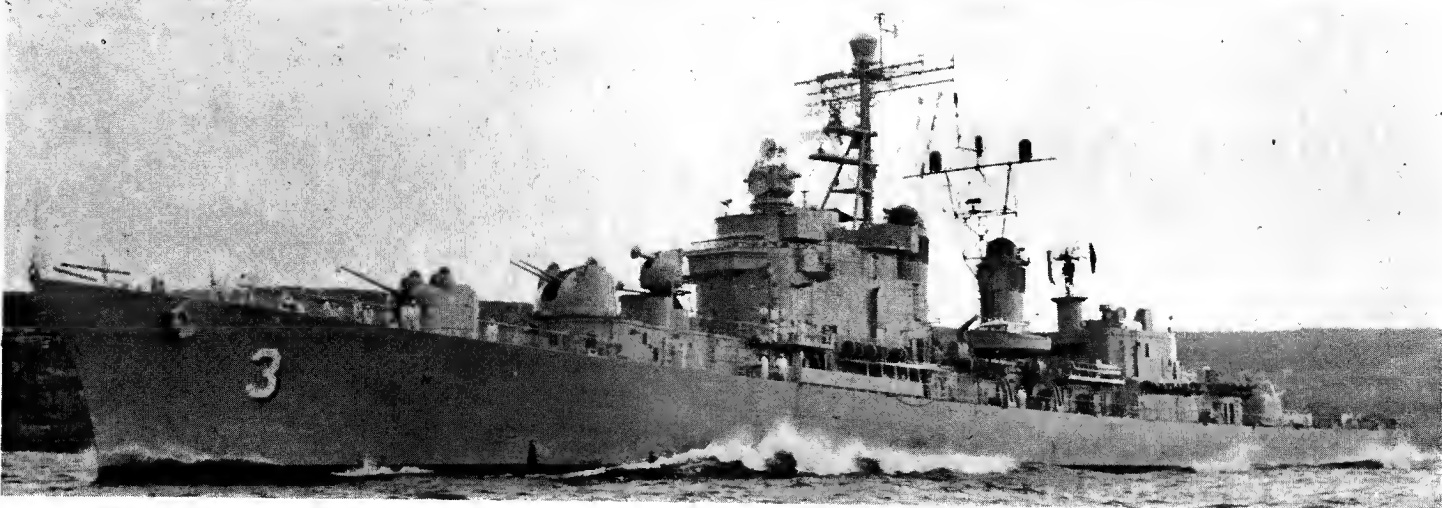
ENGINEERING. Propelling machinery, of light weight, includes several advanced engineering features. *Mitscher* and *John S. McCain*: 2 GE reduction type. Main reduction gears; GE double reduction; *Willis A. Lee* and *Wilkinson*: 2 Westinghouse, turbine reduction type. Main reduction gears; De Laval double reduction.

PHOTOGRAPHS. A starboard bow oblique aerial view of *Mitscher* with helicopter aft appears in the 1960-61 to 1963-64 editions, and a port oblique view of *Willis A. Lee* in the 1959-60 to 1966-67 editions.



WILLIS A. LEE

1967, A. & J. Pavia



JOHN S. MCCAIN

1966, courtesy Mr John C. Jeremy

DESTROYER LEADER (DL) Former Anti-Submarine Light Cruiser (CLK)

Officially rated as Frigate (DL)
Ex-Cruiser Hunter Killer, CLK

Displacement, tons	5 600 standard; 7 300 full load
Length, feet (metres)	520 (158.5) pp; 540.2 (164.6) oa
Beam, feet (metres)	54.2 (16.5)
Draft, feet (metres)	26 (7.9)
A/S	"Asroc" launcher; 2 Mk 10B rocket launchers
Guns, AA	8—3 in (76 mm) 70 cal., 4 twin
Torpedo tubes	6 (2 triple) for A/S torpedoes; B single
Boilers	4, Babcock & Wilcox 2-drum pressure 1 200 psi (84.4 kg/cm ²) superheat 950°F (510°C)
Main engines	2 sets GE geared turbines 80 000 shp, 2 shafts
Speed, knots	32
Radius, miles	7 000 at 15 knots
Oil fuel (tons)	1 400
Complement	411 (26 officers, 385 men)
Accommodation	42 officers, 505 men

Name	No.	Builders	Laid down	Launched	Completed
NORFOLK	DL 1 (ex-CLK 1)	New York Shipbuilding Corp	1 Sep 1949	29 Dec 1951	4 Mar 1953

Designed as a special anti-submarine vessel of cruiser size and novel type to engage in hunter killer operations even in the worst weather, and incorporates lessons learned at Bikini in her construction. Built on a true cruiser hull. Cost, exclusive of armament, \$44 000 000. Re-rated in 1951 as a Destroyer Leader (DL), a category then new to the US Navy, but reclassified as a Frigate (DL) on 1 Jan 1955. Intended to serve as flagship for destroyer screens attached to fast carrier forces.

ANTI-SUBMARINE. Used primarily as a test ship for new anti-submarine equipment. The largest and heaviest sonar dome (nearly 18 tons) was installed at Norfolk Naval Shipyard in 1958. Fitted with ASROC (anti-submarine rocket) and carried out evaluation of the then new weapon. The ASROC system consists of an integrated sonar device, an electrical digital fire-control computer, an eight missile launcher and the ASROC missiles themselves. Either a rocket propelled torpedo or a depth charge can be fired from the launcher. Stern cleared for anti-submarine helicopter operations.

GUNNERY. The B—20 mm AA guns were removed.

ENGINEERING. The trial speed exceeded 34 knots. (35 knots reached). Shafts are fitted with six-bladed propellers.

APPEARANCE. Has hull form resembling that of the cruisers of the "Juneau" class, with tall bridge structure and curved stem. Note her bow view similarity to the "Mitscher" class, though she is a much larger ship.

PHOTOGRAPHS. A starboard bow oblique aerial view appears in the 1959-60 edition, and a starboard quarter view in the 1957-58 to 1959-60 editions.

CLASS. Two Hunter Killer Ships were authorised in 1947. *Norfolk* (originally CLK 1), subsequently DL-1 (Destroyer Leader), was ordered on 17 Nov 1948 and commissioned on 4 Mar 1953. The construction of the projected CLK 2 was deferred in 1949.



NORFOLK

1964, courtesy "Our Navy"

DESTROYER (DD) Former Guided Missile Armed Destroyer (DDG)

Displacement, tons	2 400 standard; 3 480 full load
Length, feet (metres)	390.5 (119.0)
Beam, feet (metres)	41 (12.5)
Draft, feet (metres)	19 (5.8)
Guns, surface	4—5 in (127 mm) 38 cal, 2 twin fwd
Guns, dual purpose	4—3 in (76 mm) 50 cal. 2 twin, one abaft each funnel
A/S	2 hedgehogs
Torpedo tubes	2 triple for A/S torpedoes
Boilers	4
Main engines	Geared turbines 60 000 shp; 2 shafts
Speed, knots	32
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	680
Complement	296 (16 officers, 280 men)

Name	No.	Builders	Launched	Completed	Converted
GYATT	DD 712 (ex-DDG 1)	Federal SB & DD Co	15 Apr 1945	2 July 1945	30 Dec 1956

Originally a normal fleet destroyer (DD) of the "Gearing" class. She was the third US warship to carry the guided missile designation (the first two were *Boston* and *Canberra*, heavy cruisers).

CONVERSION. Converted into the world's first guided missile destroyer (DDG) under the Fiscal 1956 Appropriations at the Boston Naval Shipyard, Massachusetts. Fitted with the completed "Terrier" missile installation, to test the feasibility of converting existing destroyers to guided missile destroyers. Commissioned on 3 Dec 1956. She was the Navy's economical approach to a guided missile destroyer by conversion rather than by new construction.

GUIDED MISSILES. The 14 "Terrier" missiles were carried in twin magazines level with the main deck. The twin missile launcher rotated to all points. The missile installation was removed in 1962 and the ship was reclassified as a destroyer, DD, and assigned to the operational test and development force, the after deck house being retained for experimental equipment.

ANTI-SUBMARINE. Had modern anti-submarine ordnance, and was capable of countering enemy attack by supersonic aircraft or modern submarine.

RECLASSIFICATION. Reclassified from DD 712 to DDG 1 on 1 Dec 1955; to DDG 712 on 30 Dec 1956; to DDG 1 on 23 May 1957; and to DD 712 on 1 Oct 1962.



GYATT

1965, United States Navy, Official

STABILISATION. The US Navy's first warship to have a stabilisation system (British Denny-Brown retractable fin stabilisers) added to her hull structure. The system is designed to eliminate much of the rolling characteristic of small ships. It consists of two 45 sq ft retractable fins, extending out from midships well below the waterline.

PHOTOGRAPHS. Starboard quarter and port bow view of *Gyatt* in the 1957-58 edition. Starboard quarter view in the 1959-60 edition. Port quarter oblique aerial view in the 1961-62 and 1962-63 editions. Starboard broadside view in the 1957-58 to 1963-64 editions. Port broadside view in the 1964-65 edition.

DESTROYERS (DD) Conversion to DDG

18 "Forrest Sherman" Group
(including 5 "Hull" Class
and 4 "Decatur" Class DDG)

Displacement, tons	2 850 standard; 4 050 full load
Length, feet (metres)	418.5 (127.6)
Beam, feet (metres)	45 (13.7)
Draft, feet (metres)	22 (6.7) max
Aircraft	Drone A/S helicopter (DASH) in five ships (see Conversion notes)
Missiles, AA	"Tartar" launcher in five ships (see Conversion notes)
Guns, dual purpose	3—5 in (127 mm) 54 cal., 1 fwd 2 aft
Guns, AA	4—3 in (76 mm) 50 cal. (see Conversion notes)
A/S	2 hedgehogs
Torpedo tubes	6 (2 triple) for A/S homing torpedoes
Boilers	4
Main engines	2 geared turbines 70 000 shp; 2 shafts
Speed, knots	33
Complement	276 (16 officers, 260 men)
Accommodation	22 officers and 315 men

Name	No.	Builders
FORREST SHERMAN	DD 931	Bath Iron Works Corp
JOHN PAUL JONES	DDG 32	Bath Iron Works Corp
BARRY	DD 933	Bath Iron Works Corp
DECATUR	DDG 31	Bethlehem Steel, Quincy
DAVIS	DD 937	Bethlehem Steel, Quincy
MANLEY	DD 940	Bath Iron Works Corp
JONAS INGRAM	DD 938	Bethlehem Steel, Quincy
DU PONT	DD 941	Bath Iron Works Corp
BLANDY	DD 943	Bethlehem Steel, Quincy
BIGELOW	DD 942	Bath Iron Works Corp
MULLINNIX	DD 944	Bethlehem Steel, Quincy
HULL	DD 945	Bath Iron Works Corp
EDSON	DD 946	Bath Iron Works Corp
RICHARD S. EDWARDS	DD 950	Puget Sound B & D Co
MORTON	DD 948	Ingalls SB Corp
SOMERS	DDG 34	Bath Iron Works Corp
PARSONS	DDG 33	Ingalls SB Corp
TURNER JOY	DD 951	Puget Sound B & D Co

Laid down	Launched	Completed
27 Oct 1953	5 Feb 1955	9 Nov 1955
18 Jan 1954	7 May 1955	5 Apr 1956
15 Mar 1954	1 Oct 1955	31 Aug 1957
13 Sep 1954	15 Dec 1955	30 Nov 1956
1 Feb 1955	28 Mar 1956	6 Mar 1957
10 Feb 1955	12 Apr 1956	1 Feb 1957
15 June 1955	8 July 1956	19 July 1957
11 May 1955	8 Sep 1956	1 July 1957
29 Dec 1955	19 Dec 1956	26 Nov 1957
6 July 1955	2 Feb 1957	8 Nov 1957
5 Apr 1956	18 Mar 1957	7 Mar 1958
12 Sep 1956	10 Aug 1957	2 June 1958
3 Dec 1956	1 Jan 1958	7 Nov 1958
20 Dec 1956	24 Sep 1957	5 Feb 1959
4 Mar 1957	23 May 1958	16 Mar 1959
4 Mar 1957	30 May 1958	3 Apr 1959
17 June 1957	19 Aug 1958	29 Oct 1959
30 Sep 1957	5 May 1958	3 Aug 1959

These destroyers are dry, comfortable and successful. The construction of the first three was provided for under the 1952-53 programme. Not radical in design but embody certain improvements in armament. Increased freeboard forward. Entire ship's structure above main deck including gun foundations is of aluminium to obtain maximum stability while maintaining minimum ship displacement. Air conditioned throughout.

SERIAL NUMBERS. (DD 934 was ex-Japanese *Hanazuki*, DD 935 was ex-German T 35, DD 939 was ex-German Z 39).

CONVERSION. Five of this class were modernised under the 1964 Conversion Programme, with "Tartar" missile launcher and drone anti-submarine helicopter (DASH).

Converted: *Decatur* DD 936 to DDG 31 (recommissioned as such in May 1967) at Boston Naval Shipyard. *John Paul Jones* DD 932 to DDG 32 at Philadelphia Naval Shipyard, *Parsons* DD 949 to DDG 33 at Long Beach Naval Shipyard, *Somers* DD 947 to DDG 34 at San Francisco Naval Shipyard (DDGs have 1—5 inch gun, 1 "Tartar", 1 ASROC, 2 triple torpedo tubes), *Barry* DD 933 conversion for ASW modification, commenced Jan 1967 (VDS, ASROC added, one 5-inch and two 3-inch gun mounts removed). *Parsons* was taken in hand in Jan 1966 for 18-month conversion. All guns except forward 5-inch removed and torpedo tubes replaced by ASROC. *Somers* also underwent conversion to guided missile destroyer in 1966 to July 1967.

Five more of the class are being reconstructed under the Fiscal Year 1966 Conversion Programme, with new ASW capabilities—*Forrest Sherman* DD 931, *Davis* DD 937, *Jones Ingram* DD 938, *Blandy* DD 943, and *Mullinnix* DD 944, at Boston and Charleston Naval Shipyards; and five will be converted under the FY 1967 Programme with VDS and ASROC.

GUNNERY. The first US warships with guns arranged to provide more fire power aft than forward.

SONAR. In 1959 *Barry* was fitted with a new clipper bow housing a new type of sonar dome (further aft in other ships), and has stem anchor only. See photograph in the 1960-61 to 1965-66 editions.

NOMENCLATURE. *Joy* was renamed *Turner Joy* on 26 July 1957. *Decatur* was reclassified as DDG on 15 Sep 1966, and *John Paul Jones*, *Parsons* and *Somers* on 15 Mar 1967.

PHOTOGRAPHS. A photograph of *John Paul Jones* appears in the 1956-57 to 1959-60 editions, of *Decatur* in the 1959-60 to 1962-63 editions, of *Du Pont* in the 1961-62 and 1962-63 editions, of *Forrest Sherman* in the 1963-64 and 1964-65 editions, of *Barry* in the 1960-61 to 1965-66 editions, of *Bigelow* in the 1963-64 to 1965-66 editions, of *Blandy* in the 1963-64 to 1966-67 editions.



TURNER JOY

1966



MULLINNIX

1967



MANLEY

1965, Captain Aldo Fraccaroli

Destroyers—continued

Destroyers (DD, ex-DDE, ex-DDK)

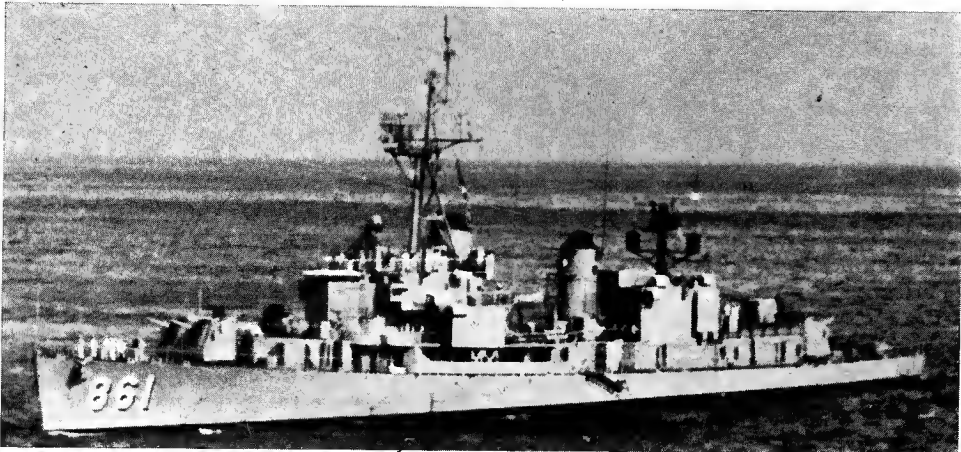
6 "Lloyd Thomas" Class
2 "Carpenter" Class

Displacement, tons	2 425 standard; 3 410 full load
Length, feet (metres)	390.5 (119.0)
Beam, feet (metres)	41 (12.5)
Draft, feet (metres)	19 (5.8)
Aircraft	2 drone A/S helicopters (DASH)
Guns,	4—5 (127 mm) 38 cal (two in Carpenter, Robert A. Owens)
A/S	Trainable hedgehog (ASROC in Carpenter, Robert A. Owens)
Torpedo tubes	2—21 in (533 mm) fixed (not in Carpenter, Robert A. Owens) 6 (2 triple) for A/S homing torpedoes
Boilers	4
Main engines	Geared turbines 60 000 shp 2 shafts
Speed, knots	35
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	650
Complement	264 (14 officers, 250 men)
Accommodation	21 officers and 270 men

Originally designed as units of the "Gearing" class, *Robert A. Owens* and *Carpenter*, towed to Newport News in 1947, were completed as Hunter-killer Destroyers on Nov 5 1949, and Dec 15 1949, respectively. The remaining six were converted under the 1949 Program. Launch dates above. They were rated as DDKs until March 4, 1950, when the DDE and DDK types merged. All reclassified as DD on 30 June 1962.

CONVERSION. *Fred T. Berry*, *Keppler*, *Lloyd Thomas*, *McCaferry* and *Norris* have undergone FRAM II conversion, and *Carpenter* and *Robert A. Owens* FRAM I conversion.

Name	No.	Builders	Launched
FRED T. BERRY	858	Bethlehem, S Pedro	28 Jan 1945
CARPENTER	825	Consolidated Steel Corpn (comp by Newport News)	30 Dec 1945
HARWOOD	861	Bethlehem, S. Pedro	24 May 1945
KEPPLER	765	Bethlehem, San Francisco	24 June 1946
McCAFFERY	860	Bethlehem, S. Pedro	12 Apr 1945
NORRIS	859	Bethlehem, S. Pedro	25 Feb 1945
ROBERT A. OWENS	827	8ath Iron Works Corpn	15 July 1946
LLOYD THOMAS	764	Bethlehem, San Francisco	5 Oct 1945

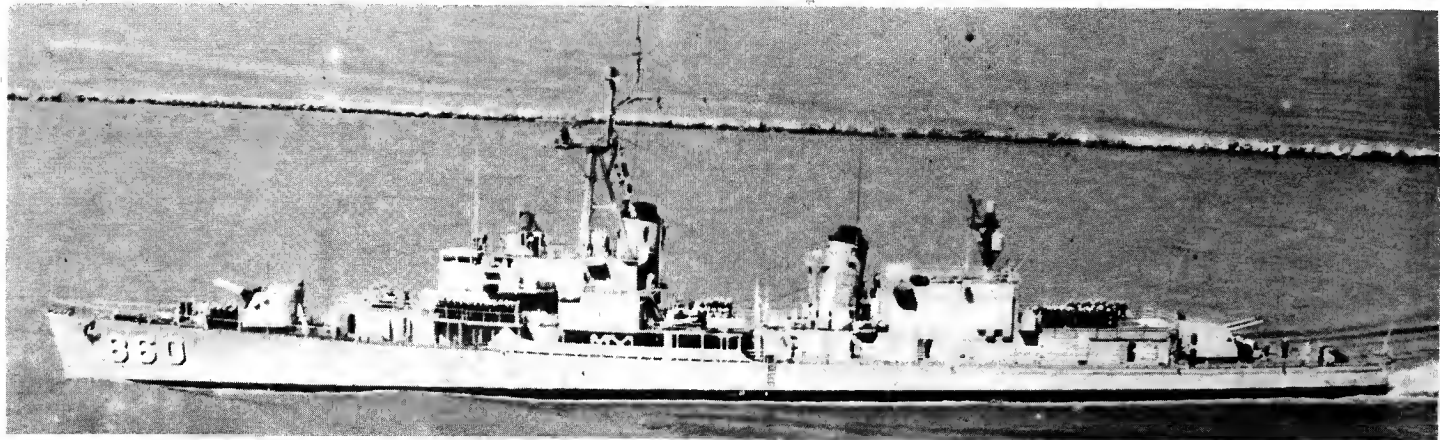


HARWOOD

1964, A. & J. Pavia

PHOTOGRAPHS. Photographs of *Lloyd Thomas* in the 1953-54 to 1957-58 editions, of *Carpenter* in the 1957-58 to 1959-60 editions, of *Fred T. Berry* in the 1957-58 to 1962-63 editions, of *Keppler* in the 1959-60 to 1963-64 editions, of *Norris* in the 1963-64 to 1965-66 editions.

Ex-DDEs (FORMER DDKs). Vessels were completed as such and converted from former DDs in order to form groups for the purpose of long- and short-range interception of submarines before they could attack convoys.



McCAFFERY (after FRAM II conversion)

1966

Destroyers (DD, ex-DDE)

7 "Basilone" Class

Displacement, tons	2 425 standard; 3 500 full load
Length, feet (metres)	390.5 (119.0) oa
Beam, feet (metres)	41 (12.5)
Draft, feet (metres)	19 (5.8)
Guns, dual purpose	4—5 in (127 mm) 38 cal., 2 twin
A/S	Fixed hedgehog
Torpedo tubes	6 (2 triple) for homing torpedoes
Boilers	4
Main engines	Geared turbines 60 000 shp; 2 shafts
Speed, knots	35
Radius, miles	5 800 at 15 knots
Oil fuel (tons)	650
Complement	264 (14 officers, 250 men)
Accommodation	21 officers and 270 men

Basilone and *Epperson*, both completed at 8ath, were two long suspended units of the "Gearing" class. They were converted to ASW (for anti-submarine warfare) and completed as escort destroyers (DDE) armed with new weapons and equipped with improved sonar and other electronic gear. Five other units were 4-gun "Gearing" redesigned DDEs on 4 Mar 1950. All were again reclassified as DDs on 1 July 1962. All of this class have undergone FRAM I conversion.

PHOTOGRAPHS. A photograph of *Holder* appears in the 1953-54 to 1957-58 editions, of *Epperson* in the 1954-55 to 1959-60 editions, of *Damato*, in the 1957-58 to 1959-60 editions, of *Basilone* in the 1959-60 to 1962-63 editions, and of *Robert L. Wilson* (before conversion) in the 1963-64 and 1964-65 editions.

Name	No.	Builders	Launched	Completed
BASILONE	824	Consolidated Steel Corpn	21 Dec 1945	21 July 1949
DAMATO	871	Bethlehem, Staten Island	21 Nov 1945	26 Apr 1946
EPPELSON	719	Federal SB & DD Co	22 Dec 1945	18 Mar 1949
HOLDER	819	Consolidated Steel Corpn	25 Aug 1945	17 May 1946
NEW	818	Consolidated Steel Corpn	18 Aug 1945	4 Apr 1946
RICH	820	Consolidated Steel Corpn	5 Oct 1945	2 July 1946
ROBERT L. WILSON	847	Bath Iron Works Corpn	5 Jan 1946	28 Mar 1946



NEW (after conversion)

1965, United States Navy, Official

Destroyers—continued

30 Destroyers (DD)

(Converted "Gearing" Class)

6 Radar Picket Destroyers (DDR)

("Kenneth D. Bailey" Class)

Displacement, tons	2 425 standard; 3 550 full load
Length, feet (metres)	390.5 (119.0) oa
Beam, feet (metres)	41 (12.5)
Draft, feet (metres)	19 (5.8)
Aircraft	Drone A/S helicopter (except DDR's)
A/S	"Asroc" launcher (except DDR's)
Guns, dual purpose	6—5 in (127 mm) 38 cal. (see Gunnery)
Boilers	4
Main engines	Geared turbines
	60 000 shp; 2 shafts
Speed, knots	35
Radius, miles	5 800 at 15 knots
Oil fuel (tons)	650
Complement	275 (15 officers, 260 men)
Accommodation	20 officers and 335 men

Originally of the "Gearing" class. The radar located abaft No. 2 stack on the after superstructure has been removed except in the six remaining DDRs.

RADAR PICKET CONVERSION. All 36 were converted from DDs to DDRs in 1949-53 and fitted with early warning radar to serve as long range-warning picket vessels against aircraft, but only *Duncan*, *Ernest G. Small*, *Frank Knox*, *Goodrich*, *Kenneth D. Bailey* and *Turner* remain as DDRs. They underwent FRAM II conversion in Fiscal Year 1960 and 1961.

GUNNERY. The secondary armament of six 3-inch anti-aircraft guns in three twin mountings has now been removed from all these ships. Several have 2 gun mounts forward and none aft.

APPEARANCE. All tripod radar mainmasts were removed and replaced by a new type of mainmast for "TACAN" and ECM antennae on the fore side of the after funnel.

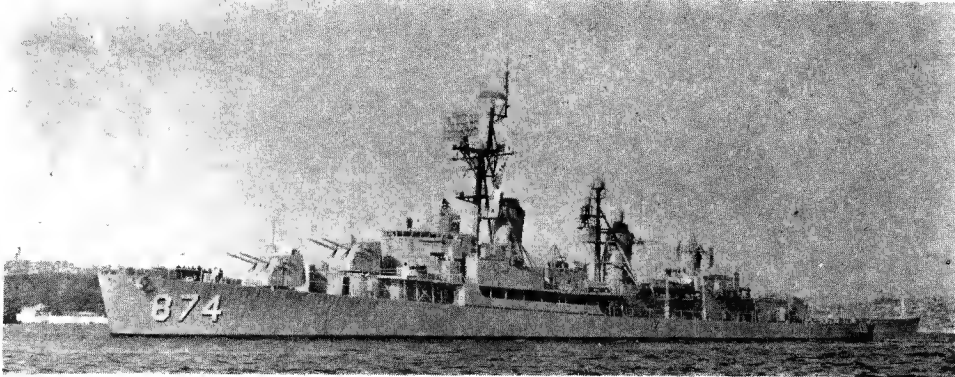
FRAM CONVERSIONS. The six DDRs and the DDs *Benner*, *Chevalier*, *Everett F. Larson* and *Perkins* (these four now constitute the "Chevalier" class, and do not have ASROC) are FRAM II conversions. All the remaining 26 ships are FRAM 1 conversions. Equipped with DASH except DDRs. The FRAM II DDs have VDS.

EXPERIMENTAL. *Herbert J. Thomas* has been fitted as a test ship with "Ships' Toxicological Operational Protective System" (STOPS) where crew is "sealed" inside.

PHOTOGRAPHS. A photograph of *Vesole* appears in the 1957-58 edition, of *Bordeleon* in the 1957-58 to 1961-62 editions, of *Newman K. Perry* in the 1960-61 and 1961-62 editions, of *Fisk* in the 1960-61 to 1963-64 editions, of *Turner* (after FRAM II conversion) in the 1962-63 to 1964-65 editions, of *Frank Knox* (after FRAM II conversion) in the 1962-63 to 1965-66 editions, of *Goodrich* (after FRAM II conversion) in the 1962-63 to 1965-66 editions.

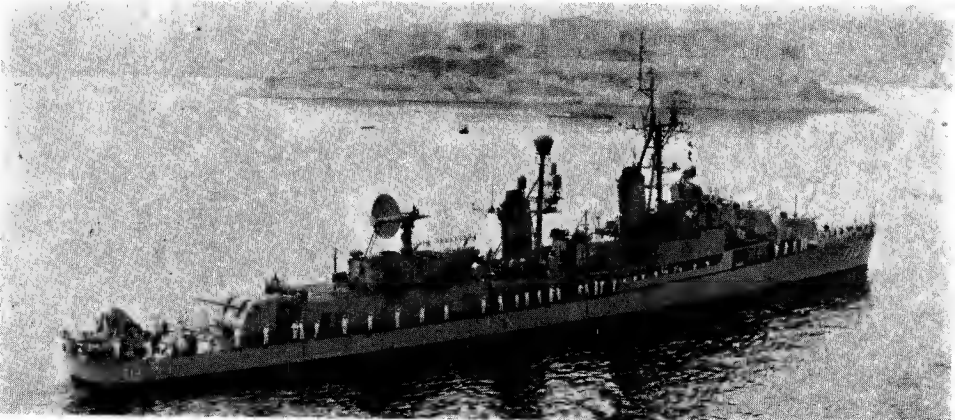
RECLASSIFICATION. *Benner*, *Chevalier*, *Everett F. Larson* and *Perkins* were reclassified from DDR to DD in 1962 and the others (except six remaining as DDR, were reclassified as DD in 1963 and 1964 after FRAM conversions.

Name	No.	Builders	Launched	Completed
BENNER	807	8ath Iron Works Corpn	20 Nov 1944	13 Feb 1945
BORDELON	881	Consolidated Steel Corpn	3 Mar 1945	5 June 1945
CHARLES P. CECIL	835	8ath Iron Works Corpn	22 Apr 1945	29 June 1945
CHEVALIER	805	8ath Iron Works Corpn	29 Oct 1944	9 Jan 1945
CORRY	817	Consolidated Steel Corpn	28 July 1945	26 Feb 1946
DENNIS J. BUCKLEY	808	Bath Iron Works Corpn	20 Dec 1944	2 Mar 1945
DUNCAN	874 (DDR)	Consolidated Steel Corpn	27 Oct 1944	25 Feb 1945
DYESS	880	Consolidated Steel Corpn	26 Jan 1945	21 May 1945
ERNEST G. SMALL	838 (DDR)	Bath Iron Works Corpn	9 June 1945	21 Aug 1945
EUGENE A. GREENE	711	Federal SB & DD Co	18 Mar 1945	8 June 1945
EVERETT F. LARSON	830	8ath Iron Works Corpn	28 Jan 1945	6 Apr 1945
FECHTELER	870	8ethlehem, Staten Island	19 Sep 1945	2 Mar 1946
FISKE	842	8ath Iron Works Corpn	8 Sep 1945	28 Nov 1945
FRANK KNOX	742 (DDR)	8ath Iron Works Corpn	17 Sep 1944	11 Dec 1944
FURSE	882	Consolidated Steel Corpn	9 Mar 1945	10 July 1945
GOODRICH	831 (DDR)	8ath Iron Works Corpn	25 Feb 1945	24 Apr 1945
HANSON	832	8ath Iron Works Corpn	11 Mar 1945	11 May 1945
HAWKINS	873	Consolidated Steel Corpn	7 Oct 1944	10 Feb 1945
HENRY W. TUCKER	875	Consolidated Steel Corpn	8 Nov 1944	12 Mar 1945
HERBERT J. THOMAS	833	Bath Iron Works Corpn	25 Mar 1945	29 May 1945
HIGBEE	806	8ath Iron Works Corpn	12 Nov 1944	27 Jan 1945
KENNETH D. BAILEY	713 (DDR)	Federal SB & DD Co	17 June 1945	31 July 1945
LEARY	879	Consolidated Steel Corpn	20 Jan 1945	7 May 1945
McKEAN	784	Todd Pacific Shipyards	31 Mar 1945	9 June 1945
MYLES C. FOX	829	Bath Iron Works Corpn	13 Jan 1945	20 Mar 1945
NEWMAN K. PERRY	883	Consolidated Steel Corpn	17 Mar 1945	26 July 1945
O'HARE	889	Consolidated Steel Corpn	22 June 1945	29 Nov 1945
PERKINS	877	Consolidated Steel Corpn	7 Dec 1944	5 Apr 1945
ROGERS	876	Consolidated Steel Corpn	20 Nov 1944	26 Mar 1945
SOUTHERLAND	743	Bath Iron Works Corpn	5 Oct 1944	22 Dec 1944
STEINAKER	863	Bethlehem, Staten Island	13 Feb 1945	26 May 1945
STICKELL	888	Consolidated Steel Corpn	16 June 1945	26 Sep 1945
TURNER	834 (DDR)	Bath Iron Works Corpn	8 Apr 1945	12 June 1945
VESOLE	878	Consolidated Steel Corpn	29 Dec 1944	23 Apr 1945
WILLIAM M. WOOD	715	Federal SB & DD Co	29 July 1945	23 Nov 1945
WILLIAM R. RUSH	714	Federal SB & DD Co	8 July 1945	21 Sep 1945



DUNCAN

1966, courtesy Mr John C. Jeremy



KENNETH D. BAILEY

1967, A. & J. Pavia



WILLIAM R. RUSH (after FRAM 1 conversion)

1965, United States Navy, Official (direct from USS William R. Rush, courtesy Commanding Officer)

45 "Gearing" Class

Displacement, tons	2 425 standard (<i>Witek</i> 2 465); 3 479 to 3 520 full load
Length, feet (<i>metres</i>)	390 5 (119 0) oa
Beam, feet (<i>metres</i>)	40 8 (12 4)
Draft, feet (<i>metres</i>)	19 (5 8) max
Aircraft	Drone A/S helicopter
A/S	Asroc, 2 triple launchers
Guns	4—5 in (127 mm) 38 cal., 2 twin
Boilers	4
Main engines	Geared turbines 60 000 shp, 2 shafts
Speed, knots	35
Radius, miles	5 800 at 15 knots
Oil fuel (tons)	650
Complement	274 (14 officers, 260 men)
Accommodation	23 officers, 340 men

Enlarged versions of "Allen M. Summer" type, with extra 14 feet length, necessitated by additional installations. All had tripod mast fitted to accommodate new large radar aerials. A 165 ton, 120-foot long bow section of the uncompleted destroyer *Seymour O. Owens* was transferred to the *Ernest G. Small* to replace the latter's bow section which was lost when that ship struck a mine off Songjin, Korea, 7 Oct 1951. Similarly the bow of the uncompleted sister ship, *Lansdale*, a section weighing 60 tons, was removed and welded on to *Floyd R. Parks* which was damaged in spring 1956 in collision with the heavy cruiser *Columbus*. *Richard E. Kraus*, formerly AG, was restored to DD in Jan 1954.

RECONSTRUCTION. *Perry*, DD 844, converted for anti-submarine warfare at a cost of \$7 700 000 in Boston Naval Shipyard, was the first of the destroyers to be modernised under the FRAM Program. She lost some of her conventional armament but gained new weapons and electronic equipment. Conversion commenced on 1 May 1959 and was completed on 1 Apr 1960. All the ships of this class, except *Witek*, have undergone FRAM I conversions and are equipped with DASH, ASROC launcher and two torpedo launchers in place of the old torpedo tubes. FRAM I extends life eight years, rebuilds superstructure rehabilitates engines and electronics, and installs ASROC. FRAM II extends life five years, installs DASH and variable depth sonar, VDS.

GUNNERY. "8" twin 5-inch mounting was removed from the experimental destroyers *Sarsfield* and *Witek*, and the after twin 5-inch mounting from *Witek* in 1962 to make room for installation of sonar dome tow-hoist mechanism. "B" (see *Gearing* below) or "Y" twin 5-inch mounting and the three twin 3-inch mountings were removed from the FRAM I conversions.

TORPEDO ARMAMENT. Five 21—inch tubes removed from FRAM conversions.

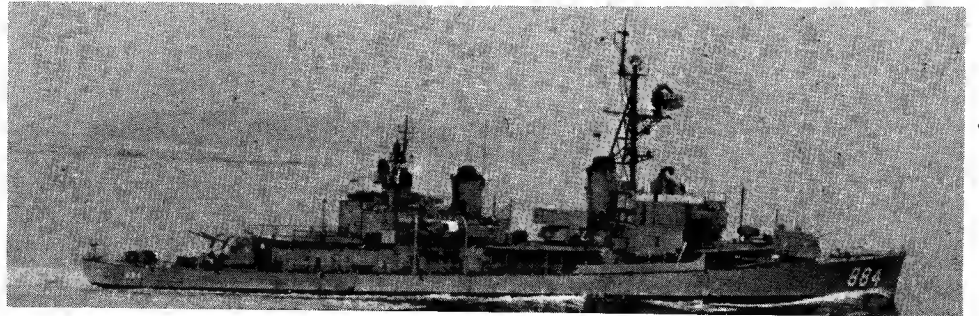
JET PROPULSION. A new system known as "pumpjet" was installed in *Witek*, EDD 848, in 1959 (photograph in the 1960-61 to 1963-64 editions). This device consists of twin sets (for 30 000 hp engines) which replace conventional propellers and make the ship quieter (see illustrations in page 478, 1959-60 edition).

CLASS. *Richard E. Kraus*, *Sarsfield* and *Witek* are EDD (experimental destroyers). *Gyatt* was converted into a guided missile destroyer in 1956, see earlier page.

PHOTOGRAPHS. Of *Meredith* in the 1952-53 to 1957-58 editions, *Theodore E. Chandler* in the 1957-58 to 1959-60 editions, *Forrest Royal* in the 1959-60 edition, *Agerholm* in the 1961-62 to 1963-64 editions, *Stribling* in the 1962-63 to 1965-66 editions, *Samuel B. Roberts* in the 1964-65 to 1966-67 editions.

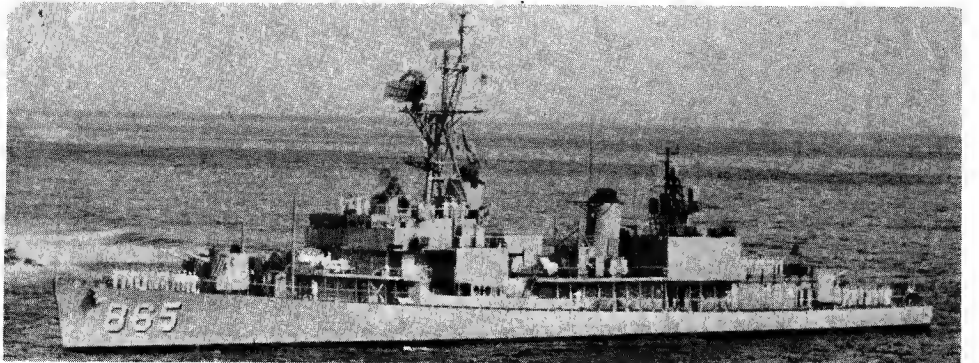
DISPOSALS. The uncompleted *Lansdale*, DD 766, and *Seymour D. Owens*, DD 767 (stricken on 9 June 1958) and *Seaman*, DD 791 (stricken in Mar 1961) were scrapped. The uncompleted *Castle*, DD 720 and *Woodrow R. Thompson* DD 721, were scrapped on 29 Aug 1955 as were *Abner Read* (769) and *Noel* (768) after WWII. DD 809-816, 854-856, 881-926 were cancelled.

Name	No.	Builders	Launched	Completed
AGERHOLM	DD 826	Bath Iron Works Corp'n	30 Mar 1946	20 June 1946
ARNOLD J. ISBEL	DD 869	Bethlehem, Staten Island	6 Aug 1945	5 Jan 1946
BAUSSELL	DD 845	Bath Iron Works Corp'n	19 Nov 1945	7 Feb 1946
BRINKLEY BASS	DD 887	Consolidated Steel Corp'n	26 May 1945	14 Sep 1945
BROWNSON	DD 868	Bethlehem, Staten Island	7 July 1945	17 Nov 1945
CHARLES H. ROAN	DD 853	Bethlehem, Quincy	15 Mar 1945	12 Sep 1946
CHARLES R. WARE	DD 865	Bethlehem, Staten Island	12 Apr 1945	21 July 1945
CONE	DD 866	Bethlehem, Staten Island	10 May 1945	17 Aug 1945
EVERSOLE	DD 789	Todd Pacific Shipyards	8 Jan 1946	10 May 1946
FLOYD B. PARKS	DD 884	Consolidated Steel Corp'n	31 Mar 1945	31 July 1945
FORREST ROYAL	DD 872	Bethlehem, Staten Island	17 Jan 1946	28 June 1946
GEARING	DD 710	Federal S8 & DD Co	18 Feb 1945	3 May 1945
GEORGE H. MCKENZIE	DD 836	Bath Iron Works Corp'n	13 May 1945	13 July 1945
GLENNON	DD 840	Bath Iron Works Corp'n	14 July 1945	4 Oct 1945
GURKE	DD 783	Todd Pacific Shipyards	15 Feb 1945	12 May 1945
HAMNER	DD 718	Federal SB & DD Co	24 Nov 1945	11 July 1945
HAROLD J. ELLISON	DD 864	Bethlehem, Staten Island	14 Mar 1945	23 June 1945
HENDERSON	DD 785	Todd Pacific Shipyards	28 May 1945	4 Aug 1945
HOLLISTER	DD 788	Todd Pacific Shipyards	9 Oct 1945	29 Mar 1946
JAMES E. KYES	DD 787	Todd Pacific Shipyards	4 Aug 1945	8 Feb 1946
JOHN R. CRAIG	DD 885	Consolidated Steel Corp'n	14 Apr 1945	20 Aug 1945
JOHNSTON	DD 821	Consolidated Steel Corp'n	19 Oct 1945	22 Aug 1946
JOSEPH P. KENNEDY, Jr	DD 850	Bethlehem, Quincy	26 July 1945	14 Dec 1945
LEONARD F. MASON	DD 852	Bethlehem, Quincy	4 Jan 1946	28 June 1946
MEREDITH	DD 890	Consolidated Steel Corp'n	28 June 1945	31 Dec 1945
NOA	DD 841	Bath Iron Works Corp'n	30 July 1945	1 Nov 1945
ORLECK	DD 886	Consolidated Steel Corp'n	12 May 1945	15 Sep 1945
OZBOURN	DD 846	Bath Iron Works Corp'n	22 Dec 1945	5 Mar 1946
PERRY	DD 844	Bath Iron Works Corp'n	25 Nov 1945	17 Jan 1946
POWER	DD 839	Bath Iron Works Corp'n	30 June 1945	13 Sep 1945
RICHARD B. ANDERSON	DD 786	Todd Pacific Shipyards	7 July 1945	28 Sep 1945
RICHARD E. KRAUS (ex-AG 51)	DD 849	Bath Iron Works Corp'n	2 Mar 1946	23 May 1946
ROBERT H. McCARD	DD 822	Consolidated Steel Corp'n	9 Nov 1945	22 Oct 1946
ROWAN	DD 782	Todd Pacific Shipyards	29 Dec 1944	31 Mar 1945
RUPERTUS	DD 851	Bethlehem, Quincy	21 Sep 1945	8 Mar 1946
SAMUEL B. ROBERTS	DD 823	Consolidated Steel Corp'n	30 Nov 1945	19 Dec 1946
SARSFIELD	DD 837	Bath Iron Works Corp'n	27 May 1945	31 July 1945
SHELTON	DD 790	Todd Pacific Shipyards	8 Mar 1946	21 June 1946
STIRBLING	DD 867	Bethlehem, Staten Island	8 June 1945	29 Sep 1945
THEODORE E. CHANDLER	DD 717	Federal SB & DD Co	20 Oct 1945	21 Mar 1946
VOGLGESANG	DD 862	Bethlehem, Staten Island	15 Jan 1945	28 Apr 1945
WARRINGTON	DD 843	Bath Iron Works Corp'n	27 Sep 1945	20 Dec 1945
WILLIAM C. LAWE	DD 763	Bethlehem, San Francisco	21 May 1945	18 Dec 1946
WILTIE	DD 716	Federal S8 & DD Co	31 Aug 1945	11 Jan 1946
WITEK	DD 848	Bath Iron Works Corp'n	2 Feb 1946	25 Apr 1946



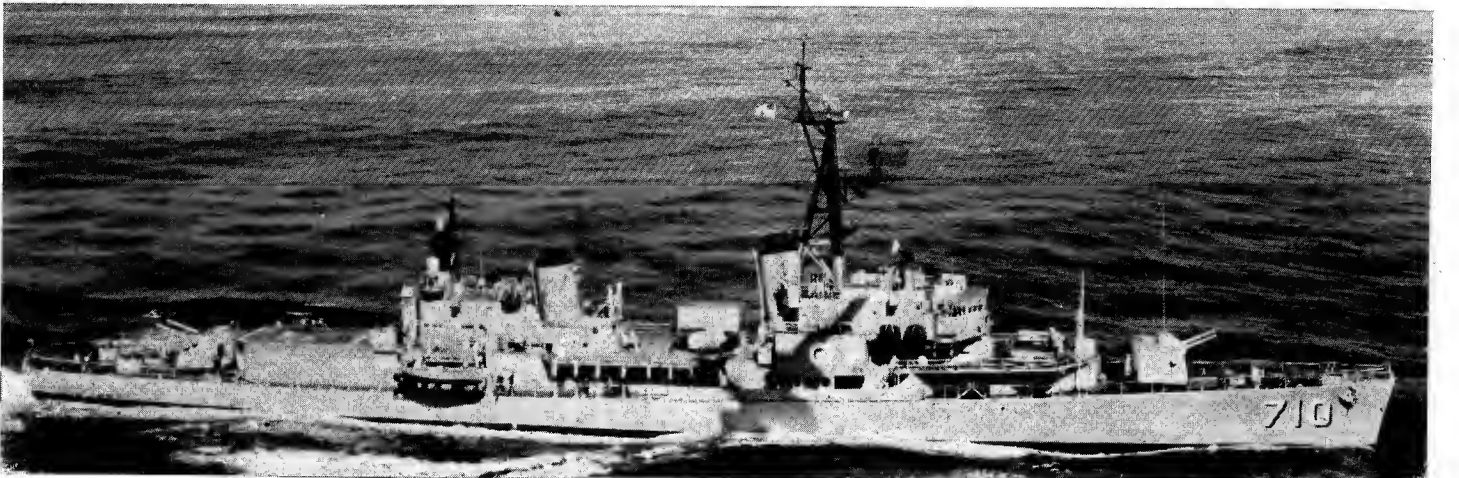
FLOYD B. PARKS

1966. Nobuo Itoki



CHARLES R. WARE

1967. A. & J. Pavia



GEARING

1964. United States Navy, Official (direct from USS Gearing, courtesy Commanding Officer)

33 "Allen M. Sumner" Class
20 "English" Class

Displacement, tons	2 200 standard; 3 320 full load
Length, feet (metres)	376.5 (114.8)
Beam, feet (metres)	40.8 (12.4)
Draft, feet (metres)	19 (5.8) max
Aircraft	Drone A/S helicopters on FRAM conversions only
A/S	2 hedgehogs on deckhouse abreast bridge front
Guns, surface	6—5 in (17 mm) 38 cal.
Torpedo tubes	2 triple for A/S homing torpedoes 2 single tubes on FRAM conversions only
Boilers	4 Babcock & Wilcox pressure 600 psi (42.2 kg/cm ²)
Main engines	Geared turbines 60 000 shp; 2 shafts
Speed, knots	33
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	274 (14 officers, 260 men)
Accommodation	22 officers, 300 men

Had a larger radius of action than destroyers previously constructed. Type is an enlargement and modification of the "Fletcher" design. After set of tubes was removed. *Collett*, damaged in collision with *Ammen*, received replacement bow from suspended *Seamen*, in Aug 1960. Twelve of this class (two scrapped) were fitted for minelaying and re-rated as DM 23-34 (see later page). *Hugh W. Hadley* was sold. War losses:—*Cooper*, *Drexler*, *Mannert D. Abele*, *Meredith*.

RECONSTRUCTION. *John W. Thomason*, was the prototype conversion for this class under the "FRAM II" Programme. Fitted with "DASH" (drone anti-submarine helicopter) on after deck landing area, with hangar facilities, variable depth sonar (1 ton sonar dome dropped over stern) and ASW torpedo tubes. The six 3 inch guns and 5—21 inch torpedo tubes were removed.

A/S WEAPONS. In the unconverted ships all but one DC rack and all K-guns were removed and replaced by two side-launching torpedo racks.

PHOTOGRAPHS. Photographs of *Moale* and *Zellars* (before FRAM modernisation) appear in the 1957-58 edition, of *Hyman* in the 1954-55 to 1958-59 editions, of *Waldron* in the 1958-59 and 1959-60 editions, of *Charles S. Sperry* in the 1959-60 and 1960-61 editions, of *Soley* in the 1957-58 to 1962-63 editions, of *Zellars* (after FRAM conversion) in the 1961-62 to 1964-65 editions, of *Borie* (FRAM II conversion) in the 1963-64 and 1964-65 editions, of *John W. Thomason* in the 1960-61 to 1966-67 editions.

GUNNERY. In the unconverted ships the 40 mm and 20 mm mounts were replaced by 3-inch, 50 cal mounts (two twin, two single), now removed.

BEATTY. Note absence of 3 inch guns in "O" and "X" positions, and ASW torpedo nests in place of 21 inch torpedo tubes.

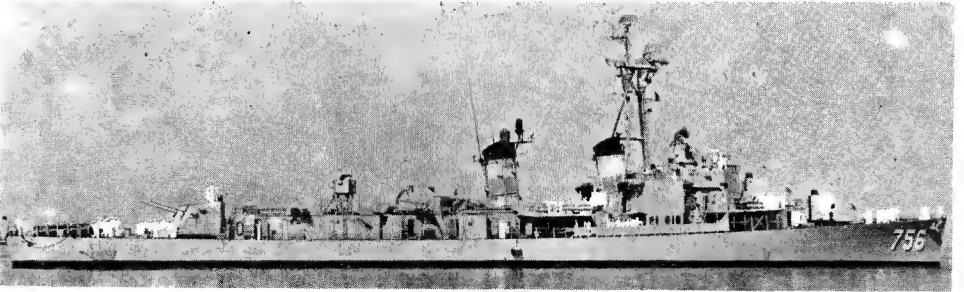
* 33 ships which underwent FRAM II Programme Conversion constitute the "Allen M. Sumner" Class. (20 ships not converted are now designated the "English" class.

Destroyers—continued

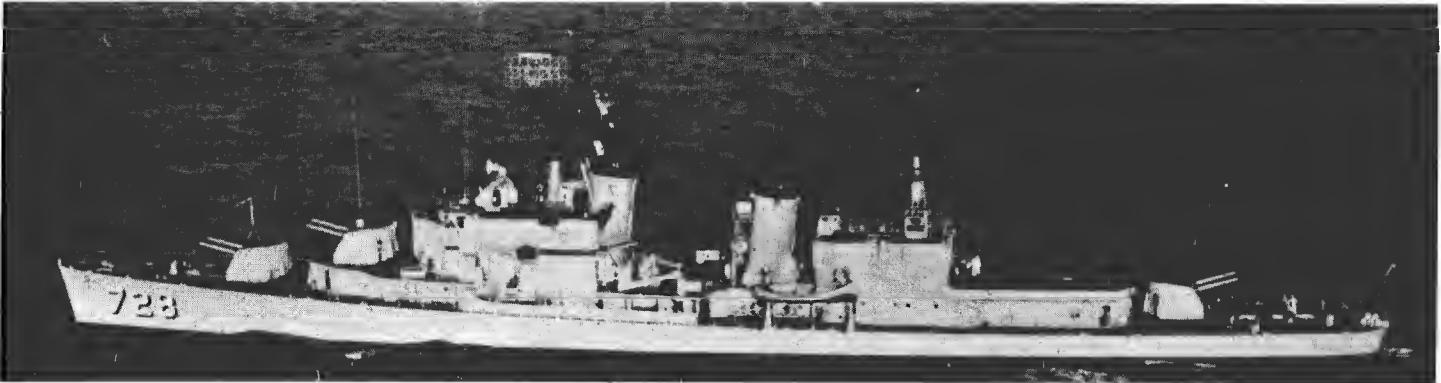
Name	No.	Builders	Launched	Completed
*ALFRED R. CUNNINGHAM	DD 752	Bethlehem, Staten Island	3 Aug 1944	23 Nov 1944
*ALLEN M. SUMNER	DD 692	Federal SB & DD Co	15 Dec 1943	26 Jan 1944
*AULT	DD 698	Federal SB & DD Co	26 Mar 1944	31 May 1944
*BARTON	DD 722	Bath Iron Works Corp	10 Oct 1943	30 Dec 1943
*BEATTY	DD 756	Bethlehem, Staten Island	30 Nov 1944	31 Mar 1945
*BLUE	DD 744	Bethlehem, Staten Island	28 Nov 1943	20 Mar 1944
*BORIE	DD 704	Federal SB & DD Co	4 July 1944	21 Sep 1944
*BRISTOL	DD 857	Bethlehem, San Pedro	29 Oct 1944	17 Mar 1945
*BRUSH	DD 745	Bethlehem, Staten Island	28 Dec 1943	17 Apr 1944
*BUCK	DD 761	Bethlehem, San Francisco	11 Mar 1945	28 June 1946
*CHARLES H. SPERRY	DD 697	Federal SB & DD Co	13 Mar 1944	17 May 1944
*COLLETT	DD 730	Bath Iron Works Corp	5 Mar 1944	16 May 1944
*COMPTON	DD 705	Federal SB & DD Co	17 Sep 1944	4 Nov 1944
*DE HAVEN	DD 727	Bath Iron Works Corp	9 Jan 1944	31 Mar 1944
*DOUGLAS H. FOX	DD 779	Todd Pacific Shipyards	30 Sep 1944	26 Dec 1944
*ENGLISH	DD 696	Federal SB & DD Co	27 Feb 1944	4 May 1944
*FRANK E. EVANS	DD 754	Bethlehem, Staten Island	3 Oct 1944	3 Feb 1944
*GAINARD	DD 706	Federal SB & DD Co	17 Sep 1944	23 Nov 1944
*HANK	DD 702	Federal SB & DD Co	21 May 1944	28 Aug 1944
*HARLAN R. DICKSON	DD 708	Federal SB & DD Co	17 Dec 1944	17 Feb 1945
*HARRY E. HUBBARD	DD 748	Bethlehem Staten Island	24 Mar 1944	22 July 1944
*HAYNSWORTH	DD 700	Federal SB & DD Co	15 Apr 1944	22 June 1944
*HENLEY	DD 762	Bethlehem, San Francisco	8 Apr 1945	8 Oct 1946
*HUGH PURVIS	DD 709	Federal SB & DD Co	17 Dec 1944	1 Mar 1945
*HYMAN	DD 732	Bath Iron Works Corp	8 Apr 1944	16 June 1944
*INGRAHAM	DD 694	Federal SB & DD Co	16 Jan 1944	10 Mar 1944
*JAMES C. OWENS	DD 776	Bethlehem, San Pedro	1 Oct 1944	17 Feb 1945
*JOHN A. BOLE	DD 755	Bethlehem, Staten Island	1 Nov 1944	3 Mar 1945
*JOHN R. PIERCE	DD 753	Bethlehem, Staten Island	1 Sep 1944	30 Dec 1944
*JOHN W. THOMASON	DD 760	Bethlehem, San Francisco	30 Sep 1944	11 Oct 1945
*JOHN W. WEEKS	DD 701	Federal SB & DD Co	21 May 1944	21 July 1944
*LAFFEY	DD 724	Bath Iron Works Corp	21 Nov 1943	8 Feb 1944
*LAWBERG	DD 759	Bethlehem, San Francisco	12 Aug 1944	26 Apr 1945
*LOWRY	DD 770	Bethlehem, San Pedro	6 Feb 1944	23 July 1944
*LYMAN K. SWENSON	DD 729	Bath Iron Works Corp	12 Feb 1944	2 May 1944
*MADDOX	DD 731	Bath Iron Works Corp	19 Mar 1944	2 June 1944
*MANSFIELD	DD 728	Bath Iron Works Corp	29 Jan 1944	14 Apr 1944
*MASSEY	DD 778	Todd Pacific Shipyards	19 Aug 1944	24 Nov 1944
*MOALE	DD 693	Federal SB & DD Co	16 Jan 1944	28 Feb 1944
*O'BRIEN	DD 725	Bath Iron Works Corp	8 Dec 1943	25 Feb 1944
*PURDY	DD 734	Bath Iron Works Corp	7 May 1944	18 July 1944
*PUTNAM	DD 757	Bethlehem, San Francisco	26 Mar 1944	12 Oct 1944
*ROBERT K. HUNTINGTON	DD 781	Todd Pacific Shipyards	10 Dec 1944	3 Mar 1945
*SOLEY	DD 707	Federal SB & DD Co	8 Sep 1944	7 Dec 1944
*STORMES	DD 780	Todd Pacific Shipyards	4 Nov 1944	27 Jan 1945
*STRONG	DD 758	Bethlehem, San Francisco	22 Apr 1944	8 Mar 1945
*SAMUEL L. MOORE	DD 747	Bethlehem, Staten Island	23 Feb 1944	24 June 1944
*TAUSSIG	DD 746	Bethlehem, Staten Island	25 Jan 1944	20 May 1944
*WALDRON	DD 699	Federal SB & DD Co	26 Mar 1944	8 June 1944
*WALKE	DD 723	Bath Iron Works Corp	27 Oct 1943	21 Jan 1944
*WALLANCE L. LIND	DD 703	Federal SB & DD Co	14 June 1944	8 Sep 1944
*WILLARD KEITH	DD 775	Bethlehem, San Pedro	29 Aug 1944	27 Dec 1944
*ZELLARS	DD 777	Todd Pacific Shipyards	19 July 1944	25 Oct 1944



MOALE (FRAM II conversion), fixed A/S TT amidships Added 1965, Dr Giorgio Arra



BEATTY (unconverted) see note Added 1965, Dr Giorgio Arra



MANSFIELD 1967, United States Navy, Official

Destroyers—continued

Destroyers (DD, ex-DDE)

16 Converted "Fletcher" Class

Displacement, tons	2 080 standard; 2 940 full load
Length, feet (metres)	376.2 (114.7) oa
Beam, feet (metres)	39.7 (12.1)
Draft, feet (metres)	18 (5.5)
Aircraft	Drone A/S helicopter
A/S	FRAM conversions: 1 Weapon "Alpha"; 2 hedgehogs; others 1 rocket launcher or trainable hedgehog, 2 fixed hedgehogs
Guns, surface	2—5 in (127 mm) singles
Guns, AA	4—3 in (76 mm), 2 twin (except on FRAM II conversions)
Torpedo tubes	2 triple for A/S homing torpedoes
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	60 000 shp; 2 shafts
Speed, knots	34
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	249 (14 officers, 235 men)
Accommodation	22 officers, 294 men

Originally orthodox fleet destroyers (DD) of the "Fletcher" class, but converted to serve as close-support convoy escorts, nine under the 1948 Programme, three under the 1949 Programme, and six under the 1950 Programme, and reclassified as DDE. All again reclassified from DDE to DD on 1 July 1962.

CONVERSION. *Jenkins*, *Nicholas* and *Radford* underwent FRAM II conversion (Fleet Rehabilitation and Modernisation) in 1960, with DASH, helo deck and hangar for two drones, and ASW torpedo launchers, a nest of three on each side.

GUNNERY. The 4—3 inch guns were removed from the FRAM II Programme conversions.

PHOTOGRAPHS. Photographs of *Fletcher*, *Jenkins* and *Nicholas* before conversion appear in the 1957-58 edition, of *Cony* in the 1958-59 to 1960-61 editions, of *Murray* in the 1957-58 to 1962-63 editions, and of *Taylor* in the 1963-64 and 1964-65 editions. A port bow view of *Nicholas* after conversion appears in the 1965-66 edition and a port broadside view of *Jenkins* in the 1962-63 to 1966-67 editions.

DISPOSALS

Murray, DD 576, was stricken on 1 June 1965, *Saufley* equipped as an experimental destroyer, mounting 1—5 inch gun, 2—3 inch AA guns, and no torpedo tubes, was decommissioned in Nov 1964 and stricken from the list on 1 Sep 1966.

Name	No.	Builders	Laid down	Launched	Completed
BACHE	470	Bethlehem, Staten Island	19 Nov 1941	27 June 1942	14 Nov 1942
BEALE	471	Bethlehem, Staten Island	19 Dec 1941	25 Aug 1942	23 Dec 1942
CONWAY	507	Bath Iron Works Corp	5 Nov 1941	16 Aug 1942	9 Oct 1942
CONY	508	Bath Iron Works Corp	24 Dec 1941	16 Aug 1942	30 Oct 1942
EATON	510	Bath Iron Works Corp	17 Mar 1942	20 Sep 1942	4 Dec 1942
FLETCHER	445	Federal SB & DD Co	2 Oct 1941	3 May 1942	30 June 1942
JENKINS	447	Federal SB & DD Co	22 Nov 1941	21 June 1942	31 July 1942
NICHOLAS	449	Bath Iron Works Corp	3 Mar 1942	19 Feb 1942	4 June 1942
O'BANNON	450	Bath Iron Works Corp	3 Mar 1941	14 Mar 1942	26 June 1942
PHILIP	498	Federal SB & DD Co	7 May 1942	13 Oct 1942	20 Nov 1942
RADFORD	446	Federal SB & DD Co	2 Oct 1941	3 May 1942	21 July 1943
RENSHAW	499	Federal SB & DD Co	7 May 1942	13 Oct 1942	4 Dec 1942
SPROSTON	577	Consolidated Steel Corp	1 Apr 1942	31 Aug 1942	18 May 1942
TAYLOR	468	Bath Iron Works Corp	28 Aug 1941	7 June 1942	28 Aug 1942
WALKER	517	Bath Iron Works Corp	31 Aug 1942	31 Jan 1943	2 Apr 1943
WALLER	466	Federal SB & DD Co	12 Feb 1942	15 Aug 1942	30 Sep 1942

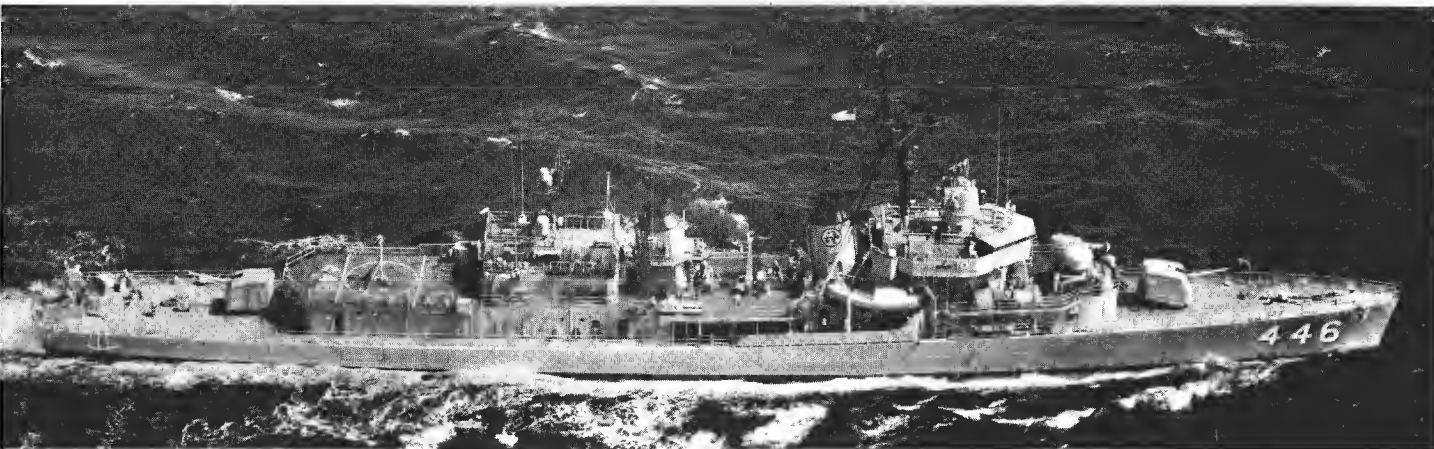


NICHOLAS (after FRAM II conversion)

United States Navy, Official

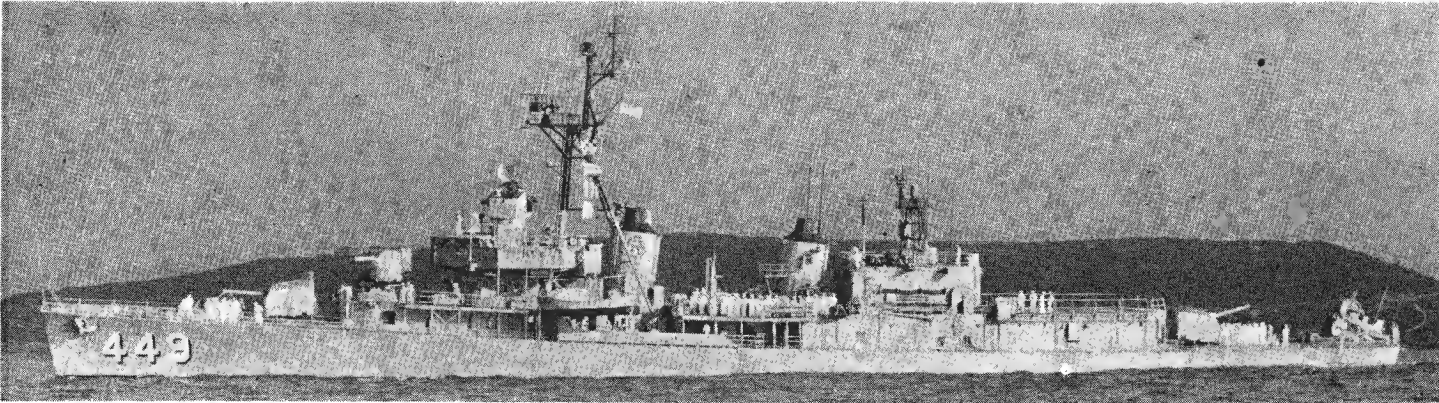
A/S WEAPONS. Fixed hedgehogs were installed on the port and starboard side of the forward shelter deck below the bridge wings.

SONAR. *Jenkins* and *Nicholas* are fitted with variable depth sonar (VDS) on the stern.



RADFORD

1967, Official



NICHOLAS (variable depth sonar on stern)

1966, courtesy Mr John C. Jeremy

Destroyers—continued

34 Later "Fletcher" Class

Displacement, tons	2 050 standard; 3 050 full load
Length, feet (metres)	376.2 (114.7)
Beam, feet (metres)	39.7 (12.1)
Draft, feet (metres)	18 (5.5)
Guns, dual purpose	5—5 in (127 mm) 38 cal. 4—5 in on converted ships
Guns, AA	10—40 mm; 6—3 in (76 mm) 50 cal. on converted ships
A/S	2 hedgehogs
Torpedo tubes	2 triple for A/S homing torpedoes
Boilers	4 Babcock and Wilcox
Main engines	GE geared turbines 60 000 shp; 2 shafts
Speed, knots	34
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	250 (14 officers, 236 men)
Accommodation	24 officers, 300 men

Laid down under the 1942 Programme. They have lower fire controls and flat-faced bridges as compared with the "Fletcher" class. War losses: *Callahan*, *Calhoun*, *Little*.

CONVERSION. *Black*, *Caperton*, *Cogswell*, *Hopewell*, *John Hood*, *McGowan*, *McNair*, *Picking*, *Preston*, *Uhlmann* and others have 4—5 inch guns (two forward and two aft), 6—3 inch, 50 cal AA guns (one pair super-firing aft, two pairs between the funnels), and five torpedo tubes abaft the after funnel. A 3-inch director on a tall pedestal replaced the third 5-inch gun in "Q" position. The forward torpedo bank between the funnels was suppressed. All vessels of the class have been or were scheduled to be similarly rearmed except *Albert W. Grant*, *Bennion*, *Bullard*, *Bryant*, *Melvin*, *Mertz* and *Norman Scott*, which are in reserve and mount their original battery. Reserve ships only retain old torpedo tubes which would be removed if the ships were activated.

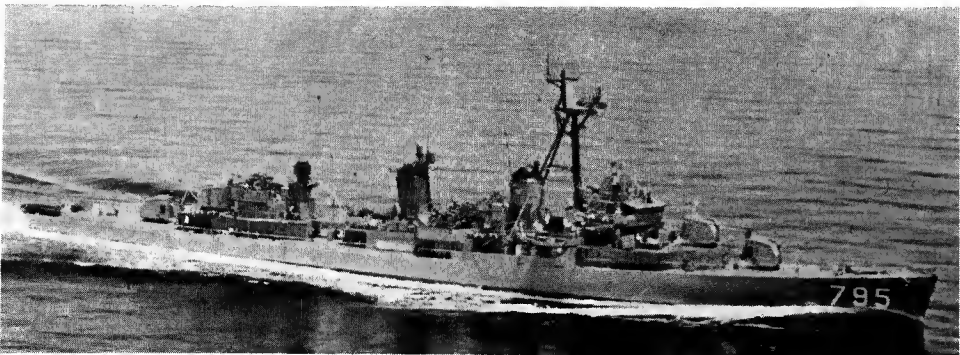
PHOTOGRAPHS. A large port broadside view of *Caperton* appears in the 1956-57 to 1960-61 editions, a starboard bow view of *Cotten* in the 1957-58 to 1964-65 editions. A large starboard broadside view of *Cassin Young* in the 1961-62 to 1964-65 editions, and a starboard quarter surface view of *Clarence K. Bronson* in the 1957-58 to 1965-66 editions.

TRANSFERS. *Heywood L. Edwards*, DD 663, and *Richard P. Leary*, DD 664, were transferred to Japan in 1959, *Cushing* DD 797, to Brazil in 1961, *Benham*, DD 796, to Peru in 1960 and *Jarvis*, DD 799, and *McGowan*, DD 768, to Spain in 1960, *Dortch*, DD 670, to Argentina in 1961, *Rooks*, DD 804, and *Wadleigh*, DD 689, to Chile in 1963. *Clarence K. Bronson*, DD 668 (see photograph in the 1957-58 to 1965-66 editions) and *Van Valkenburgh*, DD 656, were transferred to the Turkish Navy in Jan 1967. *Charles J. Badger*, DD 657, and *Hickox*, DD 673, were scheduled for transfer to the Argentine Navy in the near future but the turn over appears to be held up. *Lewis Hancock*, DD 675, and *Melvin*, DD 680, were transferred to Brazil in 1966.

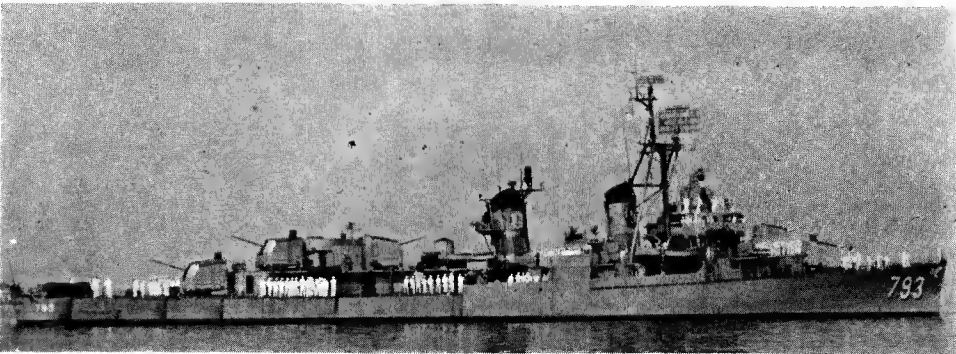
TRAINING. *Gregory*, DD 802, of this class, became a non-sea-going training ship at San Diego on 20 May 1966 and was renamed *Indoctrinator* (the ship having been deleted from the List of Naval Vessels on 1 May 1966).

DISPOSALS. *Monssen*, DD 798, was stricken from the list in Feb 1963, and *Mc Dermut*, DD 677, on 1 Apr 1965 (the latter was broken up in 1966). *Callahan*, DD 658 was stricken on 1 Aug 1966 and expended as a target off San Diego.

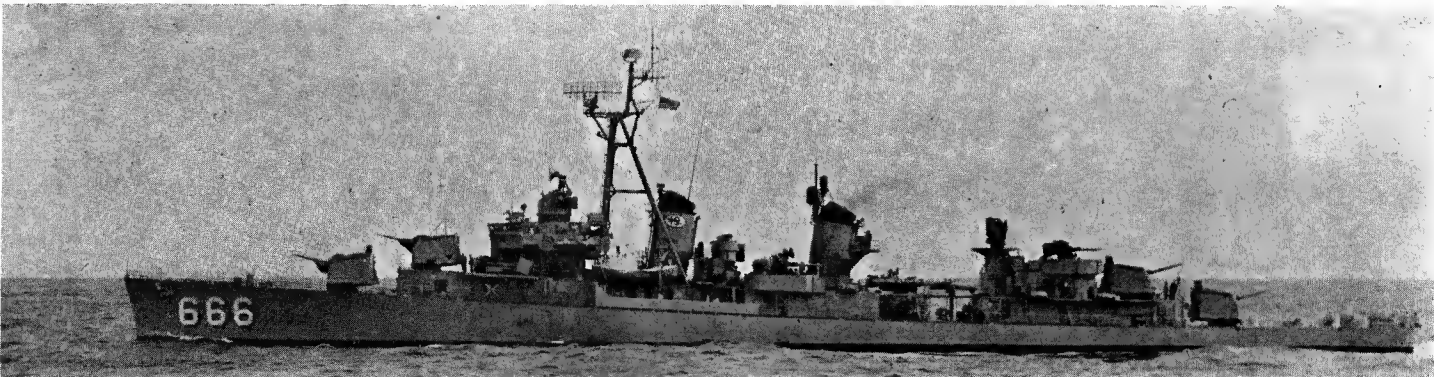
Name	No	Builders	Launched	Completed
ALBERT W. GRANT	DD 649	Charleston Navy Yard	29 May 1943	24 Nov 1943
BEARSS	DD 654	Gulf S8 Corpn	25 July 1943	12 Apr 1944
BENNION	DD 662	Boston Navy Yard	4 July 1943	14 Dec 1943
BLACK	DD 666	Federal SB & DD Co	28 Mar 1943	21 May 1943
BULLARD	DD 660	Federal S8 & DD Co	28 Feb 1943	9 Apr 1943
BRYANT	DD 665	Charleston Navy Yard	29 May 1943	4 Dec 1943
CAPERTON	DD 650	Bath Iron Works Corpn	24 July 1943	30 July 1943
CASSIN YOUNG	DD 793	Bethlehem Co San Pedro	12 Sep 1943	31 Dec 1943
CHAUNCEY	DD 667	Federal SB & DD Co	28 Mar 1943	31 May 1943
COGSWELL	DD 651	Bath Iron Works Corpn	5 June 1943	17 Aug 1943
COTTEN	DD 669	Federal SB & DD Co	12 June 1943	24 July 1943
DASHIELL	DD 659	Federal S8 & DD Co	6 Feb 1943	20 Mar 1943
GATLING	DD 671	Federal SB & DD Co	20 June 1943	19 Aug 1943
HALSEY POWELL	DD 686	Bethlehem Co Staten Island	30 June 1943	25 Oct 1943
HEALY	DD 672	Federal SB & DD Co	4 July 1943	3 Sep 1943
HOPWELL	DD 681	Bethlehem Co San Pedro	2 May 1943	30 Sep 1943
HUNT	DD 674	Federal SB & DD Co	1 Aug 1943	22 Sep 1943
INGERSOLL	DD 652	Bath Iron Works Corpn	28 June 1943	31 Aug 1943
IRWIN	DD 794	Bethlehem Co San Pedro	31 Oct 1943	14 Feb 1944
JOHN HOOD	DD 655	Gulf SB Corpn	23 Oct 1943	7 June 1944
KIDD	DD 661	Federal SB & DD Co	28 Feb 1943	23 Apr 1944
KNAPP	DD 653	Bath Iron Works Corpn	10 July 1943	15 Sep 1943
McNAIR	DD 679	Federal SB & DD Co	14 Nov 1943	30 Dec 1943
MARSHALL	DD 676	Federal S8 & DD Co	29 Aug 1943	16 Oct 1943
MERTZ	DD 691	Bath Iron Works Corpn	11 Sep 1943	19 Nov 1943
NORMAN SCOTT	DD 690	Bath Iron Works Corpn	28 Aug 1943	5 Nov 1943
PICKING	DD 685	Bethlehem Co Staten Island	31 May 1943	21 Sep 1943
PORTER	DD 800	Todd Pacific Shipyards	13 Mar 1944	24 June 1944
PORTERFIELD	DD 682	Bethlehem Co San Pedro	13 June 1943	30 Oct 1943
PRESTON	DD 795	Bethlehem Co San Pedro	12 Dec 1943	20 Mar 1944
REMEY	DD 688	Bath Iron Works Corpn	24 July 1943	30 Sep 1943
STOCKHAM	DD 683	Bethlehem Co, San Francisco	25 July 1943	11 Feb 1944
UHLMANN	DD 687	Bethlehem Co, Staten Island	30 July 1943	22 Nov 1943
WEDDERBURN	DD 684	Bethlehem Co, San Francisco	1 Aug 1943	9 Mar 1944



PRESTON 1967, Official



CASSIN YOUNG (five 5 inch guns) 1967, courtesy Dr Giorgio Arra



BLACK (four 5 inch guns) 1965, United States Navy, Official

48 "Fletcher" Class

Displacement, tons	2 100 standard; 3 050 full load
Length, feet (metres)	376.2 (114.7)
Beam, feet (metres)	39.7 (12.1)
Draft, feet (metres)	18 (5.5)
Aircraft	Drone A/S helicopters on <i>Hazelwood</i> only
Guns, dual purpose	5—5 in (127 mm) 38 cal.
Guns, AA	4—5 in on rearmed ships 6—40 mm 8ofors 6—3 in (76 mm) 50 cal. on rearmed ships
A/S	2 fixed hedgehogs
Torpedo tubes	2 triple for A/S homing torpedoes
Boilers	4 Babcock & Wilcox
Main engines	2 GE geared turbines 60 000 shp; 2 shafts
Speed, knots	34
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	249 (14 officers, 235 men)
Accommodation	24 officers, 300 men

Laid down under the 1940-41 Programme. During the war six units (including *Halford* in 1943) were experimentally fitted with a seaplane and catapult, in place of deckhouse between "Q" and "X" turrets (armament being temporarily reduced by 1—5 inch gun and 5 torpedo tubes); and some, including *Young*, had only one set of tubes. All those with two sets now reduced to one. Eighteen of these ships were modified for duty as escort destroyers (DDE), see previous page. War losses: *Abner Reed*, *Brownson*, *Bush*, *Chevalier*, *De Haven*, *Halligan*, *Hoel*, *Johnston*, *Longshaw*, *Luce*, *Morrison*, *Pringle*, *Spence*, *Strong*, *Twiggs*, *William D. Porter* heavily damaged and subsequently scrapped; *Evans*, *Haggard*, *Leutze*, *Newcomb*, *Thatcher*. Sold: *Hutchins*. Cancelled: *Percival*, *Watson*.

HELICOPTER OPERATION. *Hazelwood*, DD531, has a helicopter flight deck in place of her torpedo tubes, after twin 40 mm gun mountings, and "X" 5 inch gun, with small hangar on the port side abaft the funnels. She operates radio controlled ASW drone helicopters which release ASW weapons by remote control (see photograph).

PHOTOGRAPHS. A large starboard quarter aerial view of *Boyd* appears in the 1957-58 edition, a port quarter oblique aerial view of *Twining* in the 1957-58 to 1959-60 editions, a port bow aerial view of *Ross* in the 1954-55 to 1957-58 editions, a starboard broadside view of *Daly* in the 1956-57 to 1960-61 editions, a large port oblique aerial view of *Rowe* in the 1957-58 to 1961-62 editions, and a port bow oblique aerial view of *Watts* in the 1957-58 to 1963-64 editions.

EXPERIMENTAL. *Fullham*, DD 474 and *Howarth*, DD 592 (now sunk, see *Disposals*), and *Killen*, D 593, now stricken, were trial ships in the 1958 atomic weapons tests. *Fullham* was used as a test hull by Norfolk Naval Shipyard during 1960-62 to determine the effects of underwater explosions.

CONVERSION. *Boyd*, *Cowell*, *Daly*, *Isherwood*, *Hailey*, *Mullany*, *Ross*, *Rowe*, *Smalley* and others have four 5-inch (in "A", "B", "X" and "Y" positions), six 3 inch (twin mount in "Q" position, and two twins amidships between funnels), five 21 inch torpedo tubes (quintuple bank abaft the after funnel) and tripod mast. The forward bank of tubes were suppressed (3 inch now mounted in their place). All active units were rearmed, but over half the class are in reserve and mount their original armament, including five 21 inch torpedo tubes. *Hazelwood* was converted with a flight deck and hangar to operate helicopters (see *Helicopter Operation* above).

APPEARANCE. All the ships of this class built by the Bethlehem Steel Co have flat-sided funnels.

TRANSFERS. *Anthony*, DD 515, was transferred to the German Federal Republic in 1957, *Capps*, DD 550, and *David W. Taylor*, DD 551, were loaned to Spain in 1957 for five years (renewed in 1962), *Aulick*, DD 569, *Charette*, DD 581, and *Conner*, DD 508 were transferred to Greece in 1959, *Converse*, DD 509, to Spain in 1959, *Bennett*, DD 743, and *Guest*, DD 472, to Brazil in 1959, *Charles Ausburn*, DD 570, *Claxton*, DD 571, *Dyson*, DD 572, *Ringgold*, DD 500, and *Wadsworth*, DD 516, to the German Federal Republic in 1958-60, *Hall*, DD 583, to Greece on 9 Feb 1960, *Hailey*, DD 556, to Brazil in 1961, *Hale*, DD 642, to Columbia in 1961, *Heerman*, DD 532, and *Stembel*, DD 644, to Argentina on 1 Aug 1961, *Isherwood*, DD 520 to Peru on 8 Oct 1961, *Bradford*, DD 545, and *Brown*, DD 546, to Greece on 28 Sep 1962, *Erben*, DD 631, to Korea in May 1963, *Sigsbee* to Brazil in 1966, *Kimberley* to Taiwan China, on loan, in 1967.

DISPOSALS. *Ammen*, DD 527, was stricken from the Navy List after major collision damage in 1960. *Howarth*, DD 592, was stricken on 1 June 1961 and sunk by torpedoes off San Diego on 8 Mar 1962, *Fullham*, DD 474, was sunk as a target ship by ships and aircraft on 7 July 1962 off Cape Henry, Virginia, *Killen*, DD 593 was stricken in Jan 1963 but was still being used as a target in 1966, *Smalley*, DD 565, was stricken on 1 Apr 1965, and sold. *Tingey*, DD 539, was expended as a target in 1966.

Destroyers—continued

Name	No.	Builders	Laid down	Launched	Completed
ABBOT	DD 629	Bath Iron Works Corpn	21 Sep 1942	17 Feb 1943	23 Apr 1943
BELL	DD 587	Charleston Navy Yard	24 Feb 1942	24 June 1942	4 Mar 1943
BOYD	DD 544	Bethlehem Co, San Pedro	2 Apr 1942	29 Oct 1942	8 May 1943
BRAINE	DD 630	Bath Iron Works Corpn	12 Oct 1942	7 Mar 1943	11 May 1943
BURNS	DD 588	Charleston Navy Yard	9 May 1942	8 Aug 1942	3 Apr 1943
COWELL	DD 547	Bethlehem Co, San Pedro	7 Sep 1942	18 Apr 1943	23 Aug 1943
DALY	DD 519	Bethlehem Co, Staten Island	29 Apr 1942	24 Oct 1942	9 Mar 1943
FOOTE	DD 511	8ath Iron Works Corpn	14 Apr 1942	11 Oct 1942	22 Dec 1942
FRANKS	DD 554	Seattle-Tacoma SB Corpn	8 Mar 1942	7 Dec 1942	30 July 1943
HALFORD	DD 480	Puget Sound Navy Yard	3 June 1941	29 Oct 1942	1 May 1943
HARADEN	DD 585	Boston Navy Yard	3 June 1942	19 Mar 1943	16 Sep 1943
HARRISON	DD 573	Consolidated Steel Corpn	25 July 1941	7 May 1942	25 Jan 1943
HART	DD 594	Puget Sound Navy Yard	10 Aug 1943	25 Sep 1944	1 Dec 1944
HAZLEWOOD	DD 531	Bethlehem Co; San Francisco	1 Apr 1942	20 Nov 1942	18 June 1943
HUDSON	DD 475	Boston Navy Yard	23 Feb 1942	3 June 1942	13 Apr 1943
IZARD	DD 589	Charleston Navy Yard	9 May 1942	8 Aug 1942	15 May 1943
JOHN D. HENLEY	DD 553	Gulf SB Corpn	21 July 1941	15 Nov 1942	2 Feb 1944
JOHN RODGERS	DD 574	Consolidated Steel Corpn	25 July 1941	7 May 1942	9 Feb 1943
LA VALLETTE	DD 448	Federal SB & DD Co	27 Nov 1941	21 June 1942	11 Aug 1942
LAWS	DD 558	Seattle-Tacoma SB Corpn	19 May 1942	22 Apr 1943	18 Nov 1943
METCALF	DD 595	Puget Sound Navy Yard	10 Aug 1943	25 Sep 1944	15 Dec 1944
MILLER	DD 535	Bethlehem Co, San Francisco	18 Aug 1942	7 Mar 1943	31 Aug 1943
MULLANY	DD 528	Bethlehem Co, San Francisco	15 Jan 1942	10 Oct 1942	23 Apr 1943
MCCORD	DD 534	Bethlehem Co, San Francisco	17 Mar 1942	10 Jan 1943	19 Aug 1943
MCKEE	DD 575	Consolidated Steel Corpn	2 Mar 1942	2 Aug 1942	31 Mar 1943
OWEN	DD 536	Bethlehem Co, San Francisco	17 Sep 1942	21 Mar 1943	20 Sep 1943
PAUL HAMILTON	DD 590	Charleston Navy Yard	20 Jan 1943	7 Apr 1943	15 Nov 1943
PRICHETT	DD 561	Seattle-Tacoma SB Corpn	20 July 1942	31 July 1943	15 Jan 1944
ROBINSON	DD 562	Seattle-Tacoma SB Corpn	12 Aug 1942	28 Aug 1943	31 Jan 1944
ROSS	DD 563	Seattle-Tacoma SB Corpn	7 Sep 1942	10 Sep 1943	21 Feb 1944
ROWE	DD 564	Seattle-Tacoma SB Corpn	7 Dec 1942	30 Sep 1943	13 Mar 1944
SCHROEDER	DD 501	Federal SB & DD Co	25 June 1942	11 Nov 1942	31 Dec 1942
SHIELDS	DD 596	Puget Sound Navy Yard	10 Aug 1943	25 Sep 1944	22 Feb 1945
SIGORNEY	DD 643	Bath Iron Works Corpn	7 Dec 1942	24 Apr 1943	29 June 1943
STANLEY	DD 478	Charleston Navy Yard	30 Dec 1941	2 May 1942	15 Oct 1942
STEPHEN POTTER	DD 538	Bethlehem Co, San Francisco	27 Oct 1942	28 Apr 1943	21 Oct 1943
STEVENS	DD 479	Charleston Navy Yard	30 Dec 1941	24 June 1942	1 Feb 1943
STODDARD	DD 566	Seattle-Tacoma SB Corpn	10 Mar 1943	19 Nov 1943	15 Apr 1944
TERRY	DD 513	8ath Iron Works Corpn	8 June 1942	22 Nov 1942	26 Jan 1943
THE SULLIVANS	DD 537	Bethlehem Co, San Francisco	10 Oct 1942	4 Apr 1943	30 Sep 1943
TRATHEN	DD 530	Bethlehem Co, San Francisco	18 July 1942	22 Oct 1942	28 May 1943
TWINING	DD 540	Bethlehem Co, San Francisco	20 Nov 1942	11 July 1943	1 Dec 1943
WATTS	DD 567	Seattle-Tacoma SB Corpn	26 Mar 1943	31 Dec 1943	29 Apr 1944
WICKES	DD 578	Consolidated Steel Corpn	15 Apr 1942	13 Sep 1942	16 June 1943
WILEY	DD 597	Puget Sound Navy Yard	10 Aug 1943	25 Sep 1944	14 Mar 1945
WREN	DD 568	Seattle-Tacoma SB Corpn	24 Apr 1943	29 Jan 1944	20 May 1944
YARNALL	DD 541	Bethlehem Co, San Francisco	5 Dec 1942	25 July 1943	30 Dec 1943
YOUNG	DD 580	Consolidated Steel Corpn	7 May 1942	11 Oct 1942	31 July 1943



HAZLEWOOD (as converted with helicopter hangar and flight deck aft)



ABBOT

1944, courtesy Dr Ian S. Pearsall

Destroyers—continued

33 "Gleaves-Livermore" Class
(including Ex-Destroyer Minesweepers)

Displacement, tons	1 700 standard; 2 580 full load
Length, feet (metres)	341 (103 9) wl; 348 3 (106 2) oa
Beam, feet (metres)	36 (11 0)
Draft, feet (metres)	18 (5 5)
Guns, dual purpose	4—5 in (127 mm) 38 cal.
Guns, AA	4—40 mm
Torpedo tubes	5—21 in (533 mm) quintupled
Boilers	4 Babcock & Wilcox
Main engines	GE geared turbines
	50 000 shp; 2 shafts
Speed, knots	34
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	600
Complement	240
Accommodation	21 officers, 270 men

Butler, DMS 29, Forrest, DMS 24, and Harding, DMS 28, were scrapped. Hobson, DMS 26, sank in mid-Atlantic on 27 Apr 1952, after collision with the aircraft carrier Wasp during a night exercise. All the remaining ships of this class are out on commission in reserve.

GUNNERY. The armament of the former Destroyer Minesweepers (DMS) comprises 3—5 inch, 38 cal, 4—40 mm AA, and 4 to 5—20 mm AA.

RECLASSIFICATION. Doyle, Jeffers, Hambleton and Rodman, formerly high speed minesweepers DMS 34, DMS 27, DMS 20 and DMS 21, respectively, were reclassified as destroyers on 15 Jan 1955. Carmick, Cowie, Davison, Doran, Earle, Endicott, Fitch, Gherardi, Knight, McCook, Mervine, Quick and Thompson, formerly Destroyer Minesweepers DMS 33, DMS 39, DMS 37, DMS 41, DMS 42, DMS 35, DMS 25, DMS 30, DMS 40, DMS 36, DMS 31, DMS 32 and DMS 38 respectively, reverted to Destroyer (DD) status on 15 July 1955.

APPEARANCE. The Seattle-built ships of this class have square-faced bridges with director on the bridge instead of mounted on a pedestal.

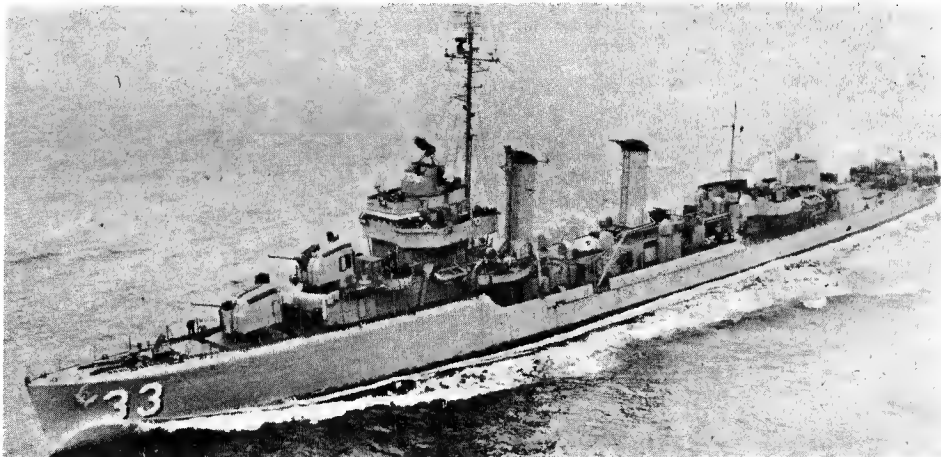
PHOTOGRAPHS. A broadside silhouette photograph of Fitch (as DMS) and a port bow aerial view of Woolsey (as DD) appear in the 1950-51 to 1957-58 editions, a starboard bow view of Gleaves appears in the 1962-63 edition, a port bow view of Gherardi in the 1951-52 to 1964-65 editions, and a port broadside view of Fitch in the 1963-64 and 1964-65 editions.

TRANSFERS. Buchanan, DD 484, and McCalla, DD 488, transferred to Turkey in 1949 and Landsdowne, DD 486, and DD 487, in 1950. Eberle, DD 430 and Ludlow, DD 438, to Greece in 1951. Nicholson, DD 442 to Italy in 1951. Ellyson and Macomb, DMS 19 and DMS 23, reclassified DD 454 and DD 458 in May 1954, lent to Japan in Oct 1954. Rodman, DD 456, transferred to Taiwan China on 28 July 1955 and Plunkett, DD 431, on Feb 16 1959.

DISPOSALS. Livermore, DD 429, was stricken from the Navy List on 19 July 1956, and expended in tests during 1957-58. Baldwin, DD 624, was stricken on 1 June 1961 (she went adrift on 15 Apr 1961 while under tow, grounded off Montauk Point, Long Island, on 16 Apr 1961, was salvaged on 4 June 1961 and scuttled on 5 June 1961). Edison, DD 439, was stricken from the Navy List on 1 Apr 1966 and Knight, DD 633, on 1 Jan 1967 and expended as a target.

Second World War losses: Aaron Ward, Beatty, Bristol, Carry, Emmons, Duncan, Glennon, Gwin, Ingraham, Maddox, Meredith, Manssen, Turner. Shubrick was so badly damaged that she was scrapped.

Name	No.	Builders	Laid down	Launched	Completed
CARMICK	DD 493	Seattle-Tacoma SB Corpn	29 May 1941	8 Mar 1942	28 Dec 1942
COWIE	DD 632	Boston Navy Yard	18 Mar 1941	27 Sep 1941	1 June 1943
DAVISON	DD 618	Federal SB & DD Co	26 Feb 1942	19 July 1942	11 Sep 1942
DORAN	DD 634	Boston Navy Yard	14 June 1941	10 Dec 1941	4 Aug 1942
DOYLE	DD 494	Seattle-Tacoma SB Corpn	29 May 1941	17 Mar 1942	27 Jan 1943
EARLE	DD 635	Boston Navy Yard	14 June 1941	10 Dec 1941	1 Sep 1942
EDWARDS	DD 619	Federal SB & DD Co	26 Feb 1942	19 July 1942	17 Sep 1942
ENDICOTT	DD 495	Seattle-Tacoma SB Corpn	1 May 1941	5 Apr 1942	25 Feb 1943
ERICSSON	DD 440	Federal SB & DD Co	18 Mar 1940	23 Nov 1940	11 Mar 1941
FITCH	DD 462	Boston Navy Yard	6 Jan 1941	14 June 1941	3 Feb 1943
FRANKFORD	DD 497	Seattle-Tacoma SB Corpn	5 June 1941	17 May 1942	31 Mar 1942
GHERARDI	DD 637	Philadelphia Navy Yard	16 Sep 1941	12 Feb 1942	15 Sep 1942
GLEAVES	DD 423	Bath Iron Works Corpn	16 May 1938	9 Dec 1939	May 1940
GRAYSON	DD 435	Charleston Navy Yard	17 July 1939	7 Aug 1940	15 Apr 1941
HAMBLETON	DD 455	Federal SB & DD Co	16 Dec 1940	26 Sep 1941	22 Dec 1941
HERNDON	DD 638	Norfolk Navy Yard	26 Aug 1941	5 Feb 1942	20 Dec 1942
JEFFERS	DD 621	Federal SB & DD Co	25 Mar 1942	26 Aug 1942	4 Nov 1942
KEARNEY	DD 432	Federal SB & DD Co	1 Mar 1939	9 Mar 1940	13 Sep 1940
MCCOOK	DD 496	Seattle-Tacoma SB Corpn	1 May 1941	3 May 1942	15 Mar 1943
MERVINE	DD 489	Seattle-Tacoma SB Corpn	3 Nov 1941	3 May 1942	16 June 1942
NELSON	DD 623	Federal SB & DD Co	7 May 1942	15 Sep 1942	25 Nov 1942
NIBLACK	DD 424	Bath Iron Works Corpn	8 Aug 1938	18 May 1940	1 Aug 1940
QUICK	DD 490	Seattle-Tacoma SB Corpn	3 Nov 1941	3 May 1942	2 July 1942
SATTERLEE	DD 626	Seattle-Tacoma SB Corpn	10 Sep 1941	17 July 1942	1 July 1943
STEVENSON	DD 645	Federal SB & DD Co	23 July 1942	11 Nov 1942	14 Dec 1942
STOCKTON	DD 646	Federal SB & DD Co	24 July 1942	11 Nov 1942	9 Jan 1943
SWANSON	DD 443	Charleston Navy Yard	15 Nov 1939	2 Nov 1940	15 July 1941
THOMPSON	DD 627	Seattle-Tacoma SB Corpn	22 Sep 1941	10 Aug 1942	10 July 1943
THORN	DD 647	Federal SB & DD Co	15 Nov 1942	28 Feb 1943	31 Mar 1943
TILLMAN	DD 641	Charleston Navy Yard	8 Sep 1941	20 Dec 1941	4 June 1942
WELLES	DD 628	Seattle-Tacoma SB Corpn	27 Sep 1941	7 Sep 1942	16 Aug 1943
WILKES	DD 441	Boston Navy Yard	1 Nov 1939	31 May 1940	12 June 1941
WOOLSEY	DD 437	Bath Iron Works Corpn	9 Oct 1939	12 Feb 1940	7 May 1941



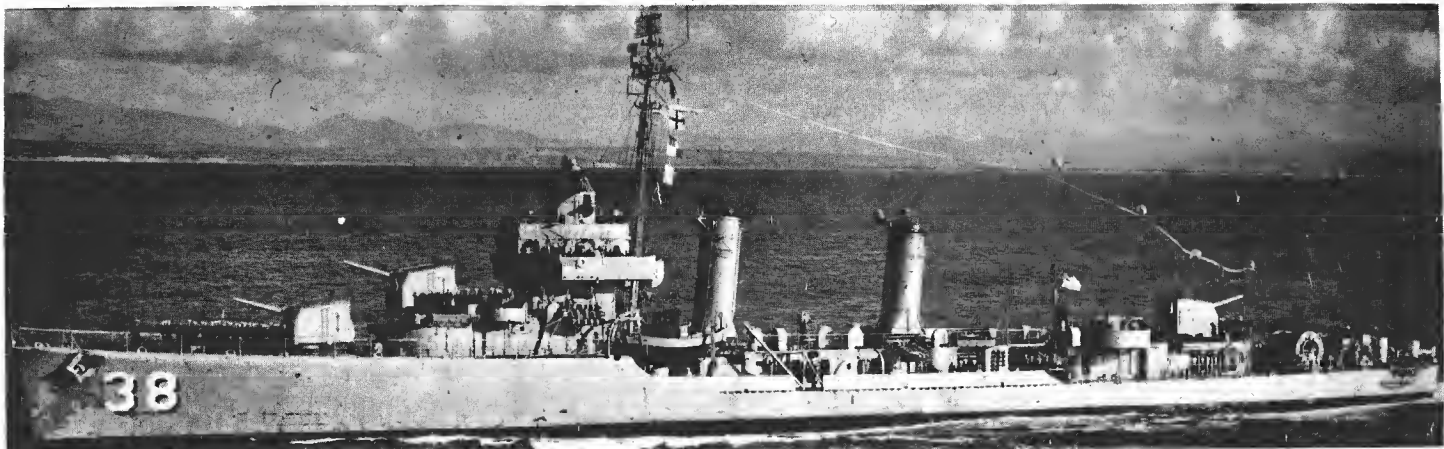
CARMICK

Added 1965, United States Navy, Official



GHERARDI (showing sweeping gear)

A. & J. Pavia



THOMPSON

Ted Stone

Destroyers—continued

22 "Benson-Mayo" Class

Displacement, tons	1 620 standard; 2 575 full load
Length, feet (metres)	348 2 (106 1) oa
Beam, feet (metres)	35 3 (10 8)
Draft, feet (metres)	18 (5 5)
Guns, surface	4—5 in (127 mm) 38 cal.
Guns, AA	4—40 mm; 7—20 mm
Torpedo tubes	5—21 in (533 mm) quintupled
Boilers	4 high pressure
Main engines	Geared turbines
	50 000 shp; 2 shafts
Speed, knots	34
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	600
Complement	230
Accommodation	17 officers, 280 men

Name	No.	Builders	Laid down	Launched	Completed
BAILEY	DD 492	Bethlehem, Staten Island	29 Jan 1941	19 Dec 1941	11 May 1942
BANCROFT	DD 598	Bethlehem, Quincy	20 May 1941	31 Dec 1941	30 Apr 1942
BOYLE	DD 600	Bethlehem, Quincy	31 Dec 1941	15 June 1942	15 Aug 1942
CHAMPLIN	DD 601	Bethlehem, Quincy	31 Jan 1942	25 July 1942	12 Sep 1942
CHARLES F. HUGHES	DD 428	Puget Sound Navy Yard	3 Jan 1939	16 May 1940	18 Oct 1940
CAGHLAN	DD 606	Bethlehem, San Francisco	28 Mar 1941	16 Feb 1942	10 July 1942
FARENHOLT	DD 491	Bethlehem, Staten Island	11 Dec 1940	19 Nov 1941	2 Apr 1942
FRAZIER	DD 607	Bethlehem, San Francisco	5 July 1941	17 Mar 1942	30 July 1942
GANSEVOORT	DD 608	Bethlehem, San Francisco	16 June 1941	11 Apr 1942	25 Aug 1942
GILLESPIE	DD 609	Bethlehem, San Francisco	16 June 1941	8 May 1942	16 Sep 1942
HOBBY	DD 610	Bethlehem, San Francisco	30 June 1941	4 June 1942	18 Nov 1942
KALK	DD 611	Bethlehem, San Francisco	30 June 1941	18 July 1942	17 Oct 1942
LAUB	DD 613	Bethlehem, San Pedro	1 May 1941	1 June 1942	24 Oct 1942
McLANAHAN	DD 615	Bethlehem, San Pedro	29 May 1941	7 Sep 1942	19 Dec 1942
MACKENZIE	DD 614	Bethlehem, San Pedro	1 May 1941	27 June 1942	21 Nov 1942
MADISON	DD 425	Boston Navy Yard	19 Dec 1938	20 Oct 1939	6 Dec 1940
MAYO	DD 422	Bethlehem, Quincy	16 May 1938	26 Mar 1940	18 Sep 1940
MEADE	DD 602	Bethlehem, Staten Island	25 Mar 1941	15 Feb 1942	22 June 1942
MURPHY	DD 603	Bethlehem, Staten Island	19 May 1941	29 Apr 1942	25 July 1942
NIELDS	DD 616	Bethlehem, Quincy	15 June 1942	1 Oct 1942	15 Jan 1943
ORDRONAUX	DD 617	Bethlehem, Quincy	25 July 1942	9 Nov 1942	13 Feb 1943
PARKER	DD 604	Bethlehem, Staten Island	9 June 1941	12 May 1942	29 Aug 1942

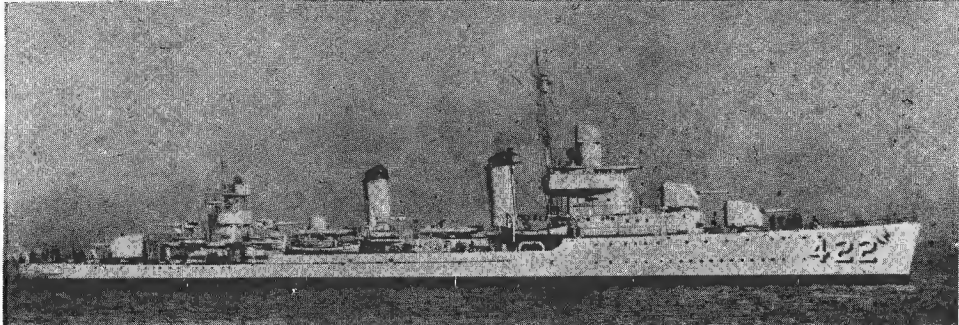
Built to the design of Bethlehem Steel Co. War losses: *Barton*, *Laffey*, *Lonsdale*. All of this class are out of commission, in reserve.

APPEARANCE. All ships of the class have flat-sided funnels. Some still have 10 torpedo tubes. Some have five torpedo tubes. (These old 21 inch in quintuple banks would be removed if the ships were actuated for service). Others have none.

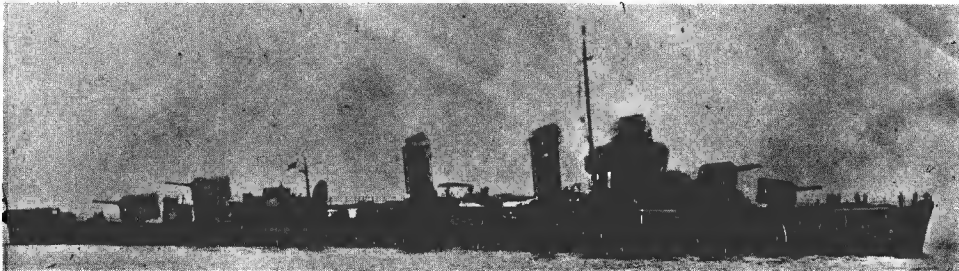
TRANSFERS. *Woodworth*, DD 460, was transferred to Italy in 1951. *Benson*, DD 421, and *Hilary P. Jones*, DD 427 were transferred to Taiwan China in 1954.

RESCINDED CONVERSION. Two destroyers of this class were to have been converted to Corvettes (DDC) as prototypes for the conversion of the "Gleaves" and "Mayo" classes. Conversion plans provided for the removal of two boilers and the addition of a new sonar installation. But the conversions were rescinded.

DISPOSALS of this class *Caldwell*, DD 605, was stricken on 1 May 1965, and *Kendrick*, DD 612, was stricken on 1 May 1966. The old destroyer *Winslow*, AG 127 (ex-DD 359), of the "Selfridge" class, modified for radar picket and experimental ordnance testing, was stricken in Jan 1958.



MAYO (original appearance) Added 1965, United States Navy, Official



BAILEY (war appearance) Added 1966, United States Navy, Official

DESTROYER MINELAYERS (DM) Ex-Destroyers (DD)

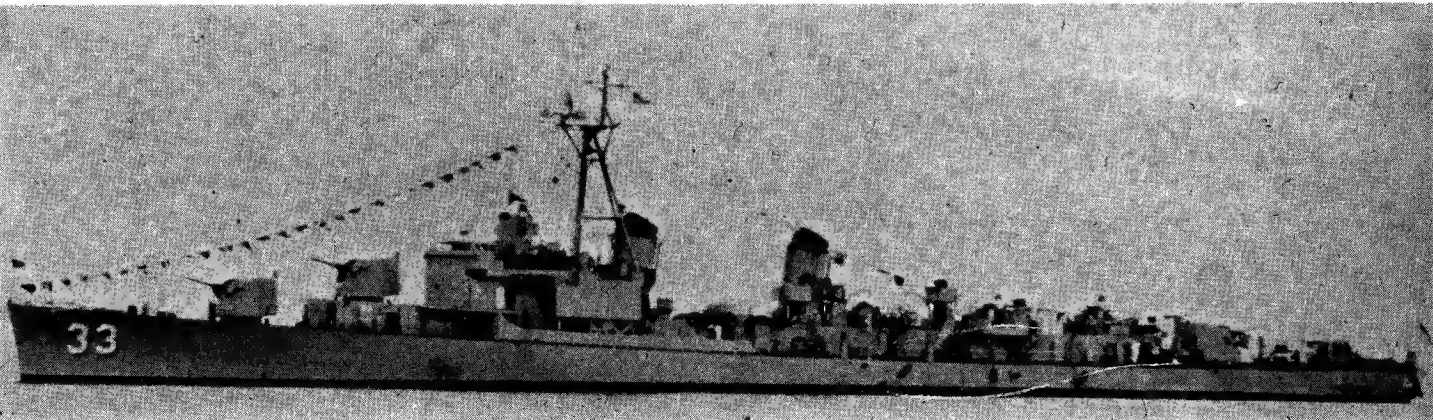
10 "Smith" Class

Displacement, tons	2 250 standard; 3 375 full load
Length, feet (metres)	376 5 (114 8)
Beam, feet (metres)	41 (12 5)
Draft, feet (metres)	19 (5 8)
Guns, surface	6—5 in (127 mm) 38 cal.
Guns, AA	12—40 mm; 11—20 mm, (some rearmed with 6—3 in (76 mm) in place of 40 mm)
Mines	80 capacity
Boilers	4 Babcock and Wilcox
Main engines	Geared turbines
	60 000 shp; 2 shafts
Speed, knots	34
Radius, miles	6 000 at 15 knots
Oil fuel (tons)	650
Complement	275 (15 officers, 260 men)
Accommodation	22 officers, 300 men

Name	No.	Builders	Launched	Completed
ADAMS	DM 27 (ex-DD 739)	Bath Iron Works Corpn	23 July 1944	10 Oct 1944
GWIN	DM 33 (ex-DD 772)	Bethlehem, San Pedro	9 Apr 1944	30 Sep 1944
HARRY F. BAUER	DM 26 (ex-DD 738)	Bath Iron Works Corpn	9 July 1944	22 Sep 1944
HENRY A. WILEY	DM 29 (ex-DD 749)	Bethlehem, Staten Island	21 Apr 1944	31 Aug 1944
LINDSEY	DM 32 (ex-DD 771)	Bethlehem, San Pedro	5 Mar 1944	20 Aug 1944
ROBERT H. SMITH	DM 23 (ex-DD 735)	Bath Iron Works Corpn	25 May 1944	4 Aug 1944
SHANNON	DM 25 (ex-DD 737)	Bath Iron Works Corpn	24 June 1944	8 Sep 1944
SHEA	DM 30 (ex-DD 750)	Bethlehem, Staten Island	20 May 1944	30 Sep 1944
THOMAS E. FRASER	DM 24 (ex-DD 736)	Bath Iron Works Corpn	10 June 1944	22 Aug 1944
TOLMAN	DM 28 (ex-DD 740)	Bath Iron Works Corpn	13 Aug 1944	27 Oct 1944

Modified Destroyers of the "Allen M. Sumner" class. Later fitted with tripod masts. All out of commission, in reserve. PHOTOGRAPHS. A starboard broadside view of *Harry F. Bauer* appears in the 1957-58 to 1965-66 editions.

RECLASSIFICATION. Formerly classified as Light Minelayers (DM). Reclassified as Destroyer Minelayers (DM) in Feb 1955. DISPOSALS. *J. Wm Ditter*, DM 31, and *Aaron Ward*, DM 34 were scrapped.



GWIN courtesy Godfrey H. Walker Esq

GUIDED MISSILE ESCORT SHIPS (DEG)

6 "Brooke" Class

Name	No.	Builders	Laid down	Launched	Completed
BROOKE	DEG 1	Lockheed SB & Constr Co*	19 Dec 1962	19 July 1963	12 Mar 1966
JULIUS A. FURER	DEG 6	Bath Iron Works Corp	12 July 1965	22 July 1966	
RAMSEY	DEG 2	Lockheed SB & Constr Co	4 Feb 1963	15 Oct 1963	
RICHARD L. PAGE	DEG 5	Bath Iron Works Corp	4 Jan 1965	4 Apr 1966	
SCHOFIELD	DEG 3	Lockheed SB & Constr Co	15 Apr 1963	7 Dec 1963	
TALBOT	DEG 4	Bath Iron Works Corp	4 May 1964	6 Jan 1966	22 Apr 1967

Displacement, tons	2 643 standard; 3 426 full load
Length, feet (metres)	414.5 (126.3) oa
Beam, feet (metres)	44 (13.4)
Draft, feet (metres)	24 (7.3) max
Aircraft	Facilities for A/S helicopter, drone
	A/S helicopter
Missiles, AA	Single "Tartar" launcher aft
A/S	"Asroc" 8-tube launcher forward
Guns,	1—5 in (127 mm) 38 cal. forward
Torpedo tubes	2 single in transom (for wire-guided torpedoes)
Torpedo launchers;	2 triple for A/S torpedoes
Boilers	2 Foster Wheeler super-charged steam generators
Main engines	Geared turbines
	35 000 shp; 1 shaft
Speed, knots	27
Complement	241 (16 officers, 225 men)
Accommodation	17 officers, 231 men

CONSTRUCTION. The first small ships of the destroyers escort type ever designed to carry guided missiles. Brooke Ramsey and Schofield (cost \$28 500 000) were authorised in Fiscal Year 1962, and Julius A. Furer, Richard L. Page and Talbot (cost \$30 100 000) in 1963.

ENGINEERING. The newly developed steam generators are only half the weight of conventional boilers of the same capacity. They permit greater speeds or increased cruising ranges without increasing the hull size. Same hull design and machinery as the conventionally armed escort ships of the "Garcia" class (see next page) Combined "macks" instead of masts and stacks.

MISSILES. Fitted with a modified "Tartar" installation (44 missiles) and integral bow mounted sonar.

*SHIPBUILDERS. Lockheed Shipbuilding and Construction Co was formerly Puget Sound Bridge & Dry Dock Co.

NOMENCLATURE. DEG 6 was first named Furer, but in a matter of days was renamed Julius A. Furer on 5 Apr 1966.

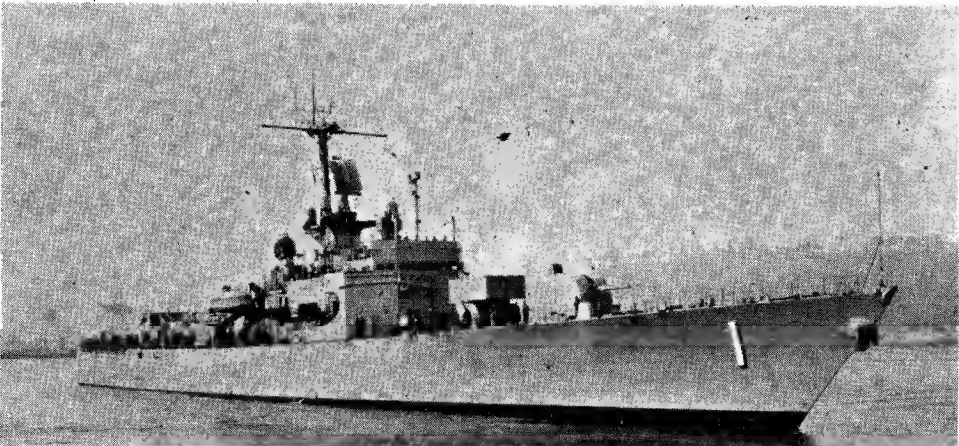
CANCELLATION. Two DEGs were requested by the Navy in Fiscal Year 1964, but were not authorised.

FOREIGN PROCUREMENT. Numbers DEG 7, 8, 9, 10, 11 were assigned to US offshore procurement for Spain.

1. Experimental Sonar Type

Displacement, tons	2 643 standard; 3 426 full load
Length, feet (metres)	414.5 (126.3) oa
Beam, feet (metres)	44 (13.4)
Draft, feet (metres)	24 (7.3) max
Aircraft	Drone A/S helicopter
A/S weapons	"Asroc" 8-tube launcher forward
Guns	1—5 in (127 mm) 38 cal forward
Torpedo tubes	2 triple for homing torpedoes
Boilers	2 supercharged steam generators, newly developed pressure fired
Speed, knots	27
Complement	225 (14 officers, 211 men)

An experimental hull of advanced hydrodynamic and propulsion design. To be used to obtain data for determining the optimum configuration for mounting sonar for best performance, and hydrodynamic and self-noise information unobtainable from model tests. Her radical propulsion system will consist of counter-rotating propellers emerging from an electric motor nacelle at the stern to reduce cavitation. It is expected that under normal search conditions it will be virtually free from propeller noises. Also fitted with waterjet propulsion system which eliminates propeller system. A long range moulded plastic sonar dome is built into the stem, and a variable depth sonar installation, housed in the bottom of the ship. With this combination she is expected to be able to detect and track a submarine at great distances, regardless of its depth. Gyroscopically controlled fin stabilisers to reduce rolling. This ship was originally authorised in the 1960 program but was postponed and re-introduced into the 1961 program. Cost \$29 330 000. Similar in appearance to "Brooke" class guided missile escort ships.



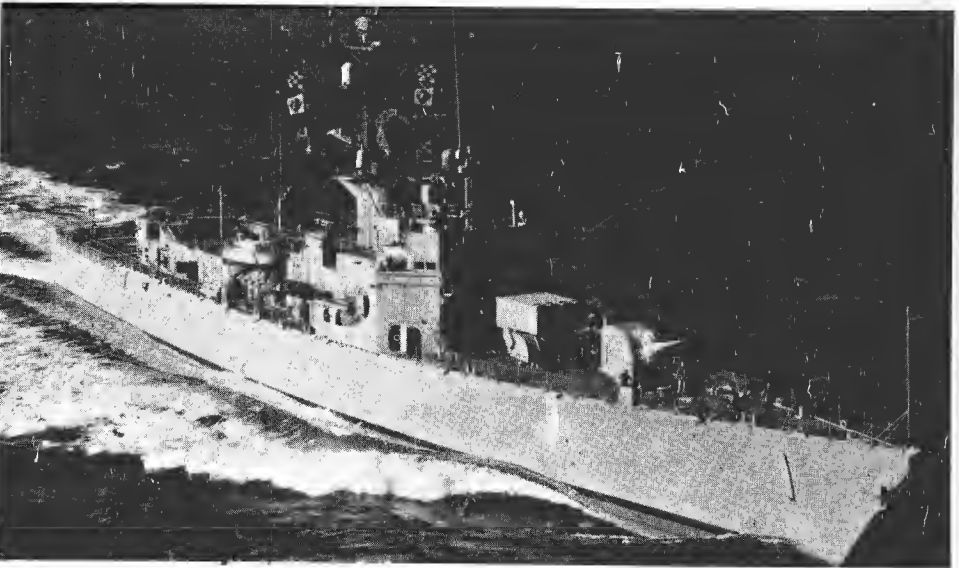
BROOKE (Prototype Guided Missile Escort Ship). 1966, courtesy Mr W. H. Davis



BROOKE 1967, Official

ESCORT RESEARCH SHIP (AGDE)

Name	No.	Builders	Laid down	Launched	Completed
GLOVER	AGDE 1 (ex-AG 163)	Bath Iron Works	29 July 1963	17 Apr 1965	13 Nov 1965



GLOVER 1967, Official

ESCORT SHIPS New Large Anti-Submarine Type (DE)

10 "Garcia" Class and 46
"Knox" Class New Construction

		Name	No.	Builders	Laid down	Launched	Commissioned
"Garcia" class*	(1040-51)						
Displacement, tons	2 624 standard; 3 403 full load	*ALBERT DAVID	DE 1050	Lockheed SB & C Co	29 Apr 1964	19 Dec 1964	
Length, feet (metres)	414.5 (126.3) oa	*BRADLEY	DE 1041	Bethlehem S Francisco	17 Jan 1963	26 Mar 1964	15 May 1965
Beam, feet (metres)	44 (13.4)	*BRUMBY	DE 1044	Avondale Shipyards	1 Aug 1963	6 June 1964	5 Aug 1965
Draft, feet (metres)	24 (7.3) max	CONNOLE	DE 1056	Avondale Shipyards	23 Mar 1967		
Guns, dual purpose	2—5 in (127 mm) 38 cal single (one forward, one aft)	*DAVIDSON	DE 1045	Avondale Shipyards	30 Sep 1963	2 Oct 1964	7 Dec 1965
A/S weapons	ASROC, DASH, 6 homing torpedo tubes (2 triple), 2 single torpedo tubes in transom	*EDWARD McDONNELL	DE 1043	Avondale Shipyards	1 Apr 1963	15 Feb 1964	15 Feb 1965
Boilers	2 Babcock & Wilcox, 1 250 psi, using JP-5 or diesel fuel	*GARCIA	DE 1040	Bethlehem S Francisco	16 Oct 1962	31 Oct 1963	21 Dec 1964
Main engines	Geared turbines, 35 000 shp; 1 shaft, speed 27 knots	GRAY	DE 1054	Todd, Seattle	19 Nov 1966		
Complement	216 (12 officers, 204 men)	HEPBURN	DE 1055	Todd, San Pedro	1 June 1966	25 Mar 1967	
		*KOELSCH	DE 1049	Defoe SB Co	19 Feb 1964	8 June 1965	June 1967
		KNOX	DE 1052	Todd, Seattle	5 Oct 1965	19 Nov 1966	
		LANG	DE 1060	Todd, San Pedro	25 Mar 1967		
		MEYERKORD	DE 1058	Todd, San Pedro	1 Sep 1966	July 1967	
		*O'CALLAHAN	DE 1051	Defoe SB Co	19 Feb 1964	20 Oct 1965	
		PATTERSON	DE 1061	Avondale Shipyards			
		RATHBURN	DE 1057	Avondale Shipyards	Apr 1967		
		ROARK	DE 1053	Todd, Seattle	2 Feb 1966	24 Apr 1967	
		*SAMPLE	DE 1048	Lockheed SB & C Co	19 July 1963	28 Apr 1964	
		*VOGE	DE 1047	Defoe SB Co	21 Nov 1963	4 Feb 1965	25 Nov 1966
		WHIPPLE	DE 1062	Todd, Seattle	24 Apr 1967		
		W. S. SIMS	DE 1059	Avondale Shipyards	10 Apr 1967		
"Knox" Class —	(1052-97)						
Displacement, tons	3 877 standard; 4 100 full load						
Length, feet (metres)	438 (133.5) oa						
Beam, feet (metres)	47 (14.3)						
Draft, feet (metres)	25 (7.6) max						
Aircraft	Drone A/S helicopter						
A/S	"Asroc"						
Guns, dual purpose	1—5 in (127 mm) 54 cal, fwd						
Torpedo tubes	6 (2 triple) launchers for A/S homing torpedoes, 2 single launchers in transom						
Boilers	2 newly developed pressure fired						
Main engines	Westinghouse geared turbines 35 000 shp; 1 shaft						
Speed, knots	27						
Complement	245						
Accommodation	19 officers, 226 men						

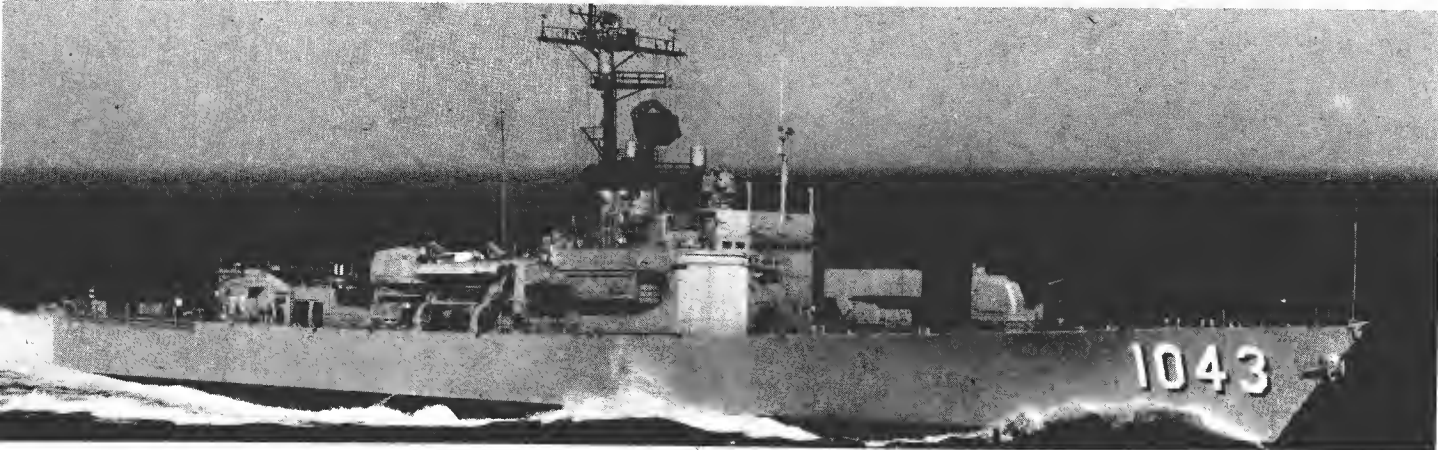
Also: Avondale Shipyards: DE 1068, 1072, 1075, 1077, 107B to 1097
Lockheed SB & C Co: DE 1063, 1065, 1069, 1073
Todd, San Pedro: DE 1067, 1071, 1074, 1076
Todd, Seattle: DE 1064, 1066, 1070

Garcia and Bradley 1961 Programme, Edward McDonnell, Brumby and Davidson 1962 Programme. Cost \$26 700 000. Albert David, Koelsch, Sample, Voge and O'Callahan 1963 Programme. Ten more DEs in 1964 programme, 18 in the 1965 programme, 10 in 1966 programme, and 10 in the 1967 programme. The contract for the latter 20 DEs of the DE 1078 class was awarded to Avondale Shipyards, Incorporated Westwego, Louisiana, for \$217 740 000.

DESIGN. Designed for optimum performances in locating and destroying submarines. Integral bow mounted long range sonar, variable depth sonar, and gyro stabilisers. Improved seaworthiness and increased anti-submarine warfare capabilities over previous DEs. Flush deck, and radically raked stem. Combined mast and stack or "mack". Stern fitted with two torpedo tubes for long range wire-guided torpedoes.



BRUMBY 1967, Official



EDWARD McDONNELL 1966



GARCIA 1967, Official

DESTROYER ESCORTS (DE)

2 "Bronstein" Class

Displacement, tons	1 890 standard; 2 650 full load
Length, feet (metres)	371.5 (113.2) oa
Beam, feet (metres)	40.5 (12.3)
Draft, feet (metres)	23 (7.0) max
Aircraft	Drone A/S helicopter carrying ASW torpedoes
A/S	"Asroc" launcher
Guns, AA	3—3 in (76 mm) 50 cal. Twin fwd, single aft
Torpedo launchers	2 triple amidships for A/S torpedoes
Boilers	Foster Wheeler supercharged
Main engines	Geared turbine; 1 shaft; 20 000 shp
Speed, knots	26
Complement	220

Name	No	Builders	Laid down	Launched	Completed
BRONSTEIN	DE 1037	Avondale Shipyards Inc	16 May 1961	31 Mar 1962	10 June 1963
McCLOY	DE 1038	Avondale Shipyards Inc	15 Sep 1961	9 June 1962	19 Oct 1963



BRONSTEIN United States Navy. Official

An entirely new ocean convoy (anti-submarine) type. Built under the Fiscal Year 1960 Programme. Light displacement 1 640 tons. These are the first destroyer escorts with bow mounted SQS 26 sonar.

FOREIGN PROCUREMENT. DE Nos 1039, 1042 and 1946 were assigned to ships built under the off-shore Programme for Portugal.

PHOTOGRAPHS. A starboard bow oblique aerial view of *Bronstein* and a port dead broadside surface view of *McCloy* appear in the 1965-66 edition.



McCLOY 1966, Official (direct from Commanding Officer USS McCloy)

4 "Claud Jones" Class

Displacement, tons	1 450 standard; 1 750 full load
Length, feet (metres)	310 (95.5) ao
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	18 (5.5) max
Guns, dual purpose	2—3 in (76 mm) 50 cal. singles with forward gun in gunhouse
A/S	2 hedgehog launchers forward
Torpedo tubes	6 (2 triple) for A/S torpedoes
Main engines	4 FM diesels, reduction drive
	1 shaft
Speed, knots	21
Complement	175

Name	No	Builders	Laid down	Launched	Completed
CLAUD JONES	DE 1033	Avondale Marine Ways, Inc	1 June 1957	27 May 1958	10 Feb 1959
JOHN R. PERRY	DE 1034	Avondale Marine Ways, Inc	1 Oct 1957	29 July 1958	5 May 1959
CHARLES BERRY	DE 1035	Avondale Marine Ways, Inc	29 Oct 1958	17 Mar 1959	25 Nov 1959
McMORRIS	DE 1036	Avondale Marine Ways, Inc	5 Nov 1958	26 May 1959	4 Mar 1960



CLAUD JONES Added 1965, United States Navy. Official

Claud Jones and *John R. Perry* were provided under the 1956 fiscal year appropriations and *Charles Berry* and *McMorris* under the 1957 programme. The latter two, originally ordered from American SB Co, Lorain, Ohio, were completed by Avondale Marine Ways. They embody new features including a unique upper deck arrangement, aluminium masts and deckhouse. Cruising range of 7 000 miles. Light displacement 1 315 tons.

ENGINEERING. These ships have diesel propelling machinery, which cost less and have increased endurance, and two funnels instead of one as in the "Dealey" type.

ANTI-SUBMARINE WARFARE. *Charles Berry* and *McMorris* were fitted with Norwegian designed "Terne III" anti-submarine missile launchers and System in 1961 at Long Beach Naval Shipyard (removed in 1964).

PHOTOGRAPHS. A port quarter oblique aerial view of *Claud Jones* appears in the 1959-60 and 1960-61 editions, and a port bow surface view in the 1964-65 edition. A port broadside aerial view of *John R. Perry* appears in the 1961-62 to 1966-67 editions.

CLASSIFICATION. Former Destroyer Escorts are now officially grouped under the generic heading of Patrol Ships with the specific classification of Escort Ships, but they approximate to the Frigate category in other navies.



McMORRIS 1967, Official

Destroyer Escorts—continued

Rated as Escort Ships (DE)

3 "Dealey", 10 "Courtney" Classes

Displacement, tons	1 450 standard; 1 914 full load
Length, feet (metres)	314.5 (95.9) oa
Beam, feet (metres)	36.8 (11.2)
Draft, feet (metres)	13.8 (4.2)
Guns, dual purpose	4—3 in (76 mm) 50 cal. 2 twin
A/S weapons	"Alpha" rocket launcher
Torpedo tubes	6 (2 triple) for A/S torpedoes
Boilers	2 Foster Wheeler
Main engines	De Laval geared turbine
	20 000 shp; 1 shaft
Speed, knots	25
Radius, miles	4 500 at 15 knots
Oil fuel (tons)	400
Complement	149 (9 officers, 140 men) to
	170 (11 officers, 159 men)

Dealey was the prototype for the first post-war anti-submarine vessels. Lavishly equipped with electronic gear. Designed specifically for fast convoy work and constructed so that in the event of war similar destroyer-escorts could be built rapidly. Single engine room. Single screw. Twin rudders. All aluminium superstructure saving 40 per cent in weight. 1 280 tons light displacement.

The first 3 ships in the table are now known as the "Dealey" class and the others as the "Courtney" class.

GUNNERY. Dealey originally had an open twin 3 inch 50 cal mount forward, and she was fitted with 2 British Squids. All ships now have the forward 3 inch mount in a gunhouse. After 3 inch in DE 1024, 1030 and others replaced by DASH installation in 1965.

PHOTOGRAPHS. A large port bow aerial view of Hooper and a broadside view of Dealey appear in the 195B-69 edition, a port bow view of Hammerberg in the 1957-5B to 1959-60 editions, a starboard broadside view of Bauer in the 1958-59 to 1960-61 editions, a port bow oblique aerial view of John Willis showing variable depth gear on the stern in the 1960-61 to 1963-64 editions, and a starboard bow oblique aerial view of Hooper in the 1959-60 to 1964-65 editions.

Name	No.	Builders	Laid down	Launched	Completed
CROMWELL	1014	Bath Iron Works Corpn	3 Aug 1953	4 June 1954	24 Nov 1954
DEALEY	1006	Bath Iron Works Corpn	15 Oct 1952	8 Nov 1953	3 June 1954
HAMMERBERG	1015	Bath Iron Works Corpn	12 Nov 1953	20 Aug 1954	28 Feb 1955
COURTNEY	1021	Defoe SB Co Bay City	2 Sep 1954	2 Nov 1955	31 Aug 1956
LESTER	1022	Defoe SB Co, Bay City	2 Sep 1954	5 Jan 1956	14 June 1957
EVANS	1023	Puget Sound B & D Co	8 Apr 1955	14 Sep 1955	14 June 1957
JOHN WILLIS	1027	New York SB Corpn	5 July 1955	4 Feb 1956	21 Feb 1957
VAN VOORHIS	1028	New York SB Corpn	29 Aug 1955	28 July 1956	15 Apr 1957
BRIDGET	1024	Puget Sound B & D Co	19 Sep 1955	25 Apr 1956	24 Oct 1957
HARTLEY	1029	New York SB Corpn	31 Oct 1955	24 Nov 1956	30 July 1957
HOOPER	1026	Bethlehem, Pacific Coast	4 Jan 1956	1 Aug 1957	16 Apr 1958
J. K. TAUSSIG	1030	New York SB Corpn	3 Jan 1956	3 Jan 1957	10 Sep 1957
BAUER	1025	Bethlehem, Pacific Coast	1 Dec 1956	4 June 1957	22 Nov 1957



HARTLEY

Added 1964



HAMMERBERG ("Dealey" Class)

1965. Wright & Logan.

Escort Ships, Radar Picket (DER)

2 Converted "John C. Butler" Class

Displacement, tons	1 745 standard; 2 100 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	36.7 (11.2)
Draft, feet (metres)	11 (3.4)
Guns,	2—5 in (127 mm) 38 cal.
A/S	Hedgehogs
Torpedo launchers	2 for A/S torpedoes
Boilers	2 Babcock & Wilcox watertube
Main engines	Westinghouse geared turbines
	12 000 shp; 2 shafts
Speed, knots	24
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	340
Complement	187

Launched as destroyer escorts (DEs), suspended in August 1946, and completed as Radar Picket Escort Vessels (DERs) at Boston Naval Shipyard. Light displacement 1 260 tons.

ENGINEERING. These two ships are the only steam driven DERs among all the Radar Picket Destroyers Escorts.

PHOTOGRAPHS. A starboard bow oblique aerial view of Wagner appears in the 1957-5B to 1966-67 editions.

Name	No.	Builders	Laid down	Launched	Completed
VANDIVIER	DER 540	Boston Naval Shipyard	8 Nov 1943	27 Dec 1943	1 Dec 1955
WAGNER	DER 539	Boston Naval Shipyard	8 Nov 1943	27 Dec 1943	31 Dec 1955



VANDIVIER

1967. Official

Destroyer Escorts—continued

Rated as Escort Ships (DE)

16 "Rudderow" Class

Displacement, tons	1 450 standard; 2 230 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	14 (4.3)
Guns, AA	2—5 in (127 mm) 38 cal.
Guns, AA	4—40 mm (10—40 mm <i>De Long</i>)
A/S	6—20 mm
Boilers	Hedgehogs, see <i>Anti-submarine</i>
	2 water tube type
	DE 579-589: Foster Wheeler
	DE 224, 225: Babcock & Wilcox
	Remainder: Combustion Eng.
Main engines	GE geared turbines, electric drive
	12 000 shp; 2 shafts
Speed, knots	24
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	37B
Complement	180 (accommodation for 220)

62 ships of this type were built. Originally rated as Destroyers Escorts (DE) but now grouped under the generic heading of Patrol Ships (Escort Ships).

ANTI-SUBMARINE. Many of the ships have trainable hedgehogs mounted forward, particularly those in use as reserve training ships. *Coates* has K-guns and torpedo launchers in addition.

TORPEDO TUBES. The original 3—21 inch torpedo tubes were removed.

TRAINING. *Parle*, DE 708, is a Great Lakes naval reserve training ship.

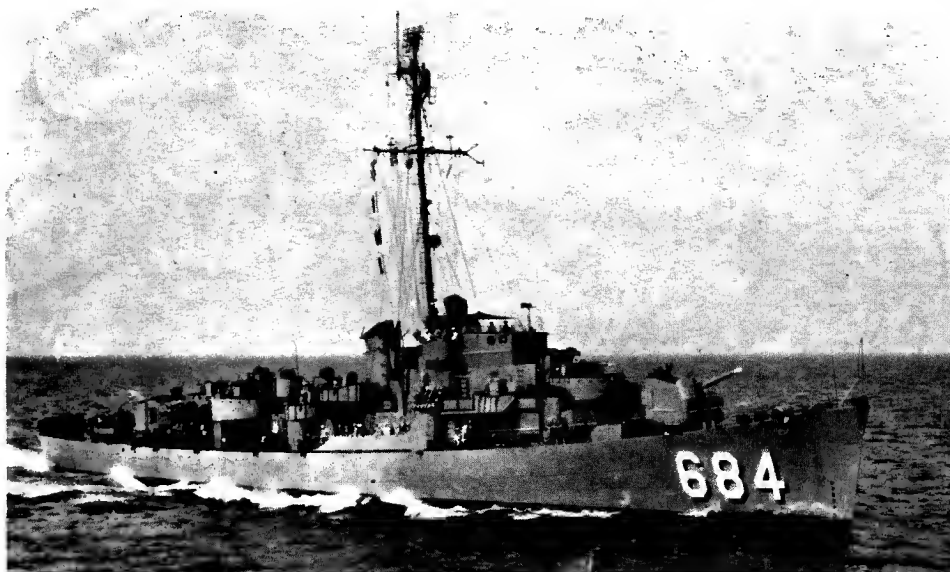
PHOTOGRAPHS. A larger port bow view of *Parle* appears in the 1962-63 to 1965-66 editions.

TRANSFERS. *Holt*, DD 706, was transferred to the Korean Navy in 1963.

DISPOSALS

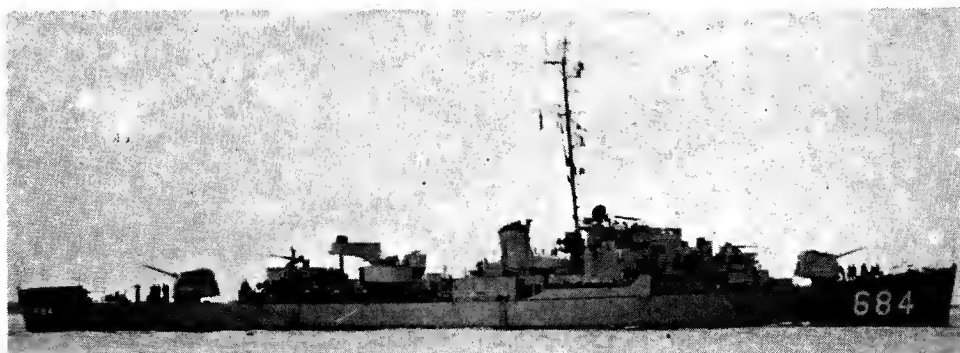
Chaffee (DE 230) was scrapped. DE 226-229, 232-237, 590-606, 687-692, 710-722 were converted into Fast Transports (APD). *Daniel A. Jay*, DE 585, was stricken on 15 May 1965, and *George A. Johnson*, DE 583, on 1 Nov 1965. *Peiffer*, DE 588, was stricken on 1 Dec 1966 and expended as a target off San Diego on 16 May 1967.

Name	No.	Builders	Launched	Completed
CHARLES H. KIMMEL	DE 584	Bethlehem-Hingham	15 Jan 1944	20 Apr 1944
COATES	DE 685	Bethlehem, Quincy	9 Dec 1943	24 Jan 1944
DE LONG	DE 684	Bethlehem, Quincy	23 Nov 1943	31 Dec 1944
DAY	DE 225	Philadelphia Navy Yard	14 Oct 1943	10 June 1944
EUGENE E. ELMORE	DE 686	Bethlehem, Quincy	23 Dec 1943	4 Feb 1944
HODGES	DE 231	Charleston Navy Yard	9 Dec 1943	27 May 1944
JOBB	DE 707	Defoe SB & Co, Bay City	4 Mar 1944	4 July 1944
LESLIE L. B. KNOX	DE 580	Bethlehem-Hingham	8 Jan 1944	22 Mar 1944
LOUGH	DE 586	Bethlehem-Hingham	22 Jan 1944	2 May 1944
MCMULTY	DE 581	Bethlehem-Hingham	8 Jan 1944	31 Mar 1944
METIVIER	DE 582	Bethlehem-Hingham	12 Jan 1944	7 Apr 1944
PARLE	DE 708	Defoe SB & Co, Bay City	25 Mar 1944	29 July 1944
RILEY	DE 579	Bethlehem-Hingham	29 Dec 1943	13 Mar 1944
RUDDEROW	DE 224	Philadelphia Navy Yard	14 Oct 1943	15 May 1944
THOMAS F. NICKEL	DE 587	Bethlehem-Hingham	22 Jan 1944	9 June 1944
TINSMAN	DE 589	Bethlehem-Hingham	29 Jan 1944	26 June 1944



DE LONG

United States Navy, Official



DE LONG (Broadside silhouette)

courtesy B. L. Devenish-Meares, Esq

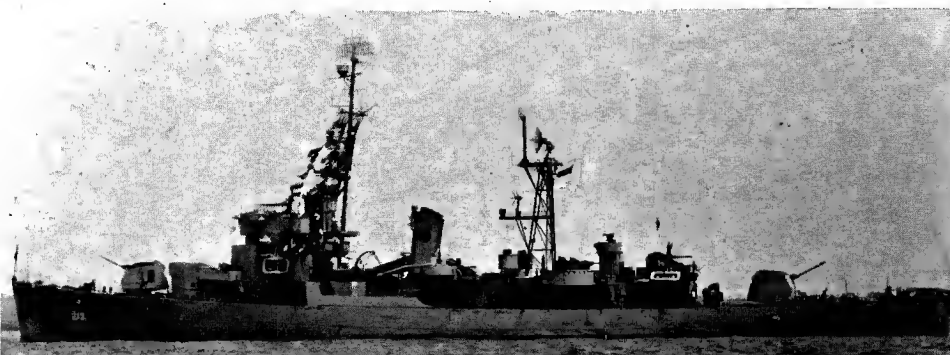
Rated as Escort Ships (DE, ex-DER)

4 Converted "Buckley" Class

Displacement, tons	1 400 standard; 2 170 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	14 (4.3)
Guns, dual purpose	2—5 in (127 mm) 38 cal.
Guns, AA	8—40 mm
Boilers	2 water tube type
	<i>Reuben James</i> : Babcock & Wilcox
	Remainder: Foster Wheeler
Main engines	GE turbines, electric drive
	12 000 shp; 2 shafts
Speed, knots	24
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	340
Complement	185 (accommodation for 220)

Built as Destroyer Escorts (DE) with 3—3 inch guns. Subsequently grouped under the generic heading of Patrol Vessels with the sub-classification, Escort Vessels, Converted and reclassified as "Escort Vessels, Radar Picket" (DER) in 1949-50, but in Oct 1954 again reclassified as Escort Vessels (DE) and on 25 Aug 1960 reclassified as Escort Ships (DE).

Name	No.	Builders	Launched	Completed
ALEXANDER J. LUKE	DE 577	Bethlehem-Hingham	28 Dec 1943	19 Feb 1944
BUCKLEY	DE 51	Bethlehem-Hingham	9 Jan 1943	30 Apr 1944
REUBEN JAMES	DE 153	Norfolk Naval Shipyard	6 Feb 1943	1 Apr 1943
ROBERT I. PAYNE	DE 57B	Bethlehem-Hingham	30 Dec 1943	28 Feb 1944



Converted "Buckley" Class

Ted Stone

DISPOSALS

Fogg, DE 57, was stricken on 10 Apr, 1965, and *Spangenburg*, DE 223, and *William T. Powell* on 1 Nov 1965.

Alexander J. Luke and *Reuben James* are to be disposed of.

Destroyer Escorts—continued

Rated as Escort Ships (DE)

65 "John C. Butler" Class

Displacement, tons	1 350 standard; 2 100 full load
Length, feet (metres)	306 (93.3) pp
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	11 (3.4)
Guns,	2—5 in (127 mm) 38 cal.
Guns, AA	2—40 mm
A/S	1 or 2 hedgehogs; DCT
Boilers	2 water tube (Combustion Engineering or Babcock & Wilcox)
Main engines	Westinghouse or GE geared turbines
	12 000 shp; 2 shafts
Speed, knots	24
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	340
Complement	190 (accommodation for 220)

Originally rated as Destroyer Escort (DE), but re-rated as Escort Ships (DE)

TORPEDO TUBES. The original 3—21 inch torpedo tubes were removed.

ANTI-SUBMARINE WARFARE. *Alvin C. Cockerill* has a trainable hedgehog forward, in "B" position. Two ships, *Lewis* and *Tweedy*, were converted to anti-submarine escorts. *Lewis* had two hedgehogs forward, in "B" position.

CLASS. The completion of *Vandivier* and *Wagner* of this class was suspended in Aug 1946, but under the 1954 Fiscal Year Conversion Programme these two ships were completed as radar picket escort vessels (DER) at Boston Naval Shipyard (see previous page).

GUNNERY. The 6—20 mm AA guns in most ships have been or are being removed.

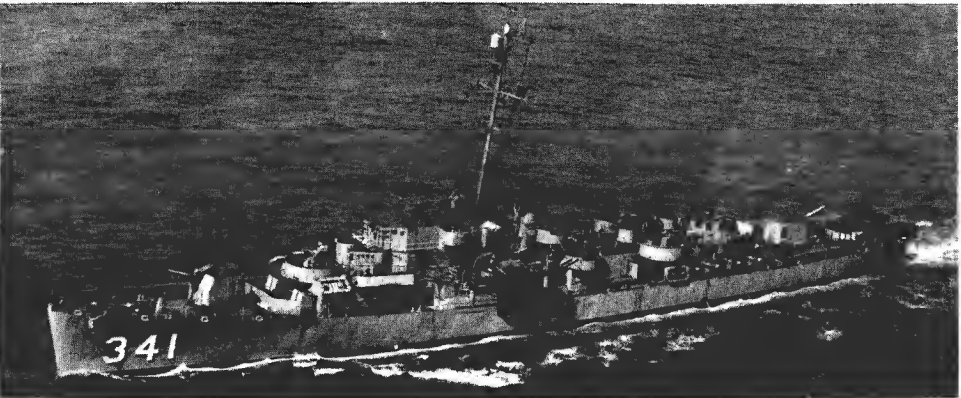
PHOTOGRAPHS. A port oblique aerial view of *Maurice J. Manuel* (with mainmast) and a port broadside surface view of *Rizzi* appear in the 1954-55 to 1957-58 editions, a port oblique aerial view of *Raymond* in the 1957-58 and 1958-59 editions, a port bow surface view of *Tweedy* in the 1957-58 to 1961-62 editions, and a port bow oblique aerial view of *Lewis* (showing two hedgehogs in "B" Position) in the 1959-60 to 1964-65 editions, a port bow oblique aerial view of *Alvin C. Cockerill* showing trainable hedgehog in the 1959-60 to 1965-66 editions, a port bow oblique aerial view of *Thaddeus Parker* in the 1965-66 edition and a port bow near broadside surface view of *Rizzi* in the 1966-67 edition.

TRANSFERS. Of this class, *Formoe*, DE 509, and *McCoy Reynolds*, DE 440, were loaned to Portugal on 7 Feb 1957 for five years, and the loan was renewed in 1962 for the same term.

DISPOSALS
The incomplete *Oswald A. Powers*, DE 542, and *Sheeham*, DE 541, of this class were scrapped. *Woodson*, DE 359, was stricken on 1 July 1965, *Douglas A. Munro*, DE 422, on 1 Dec 1965 (expended, used as a target vessel), *Ulvert M. Moore*, DE 442, on 1 Dec 1965 (and expended as a target off San Diego in July 1966), *Lewis*, DE A/S 535, and *Narfeh*, DE 352 on 1 Jan 1966 (expended as targets off San Diego on 21 Apr 1966 and in July 1966, respectively), *Heyliger*, DE 510, *Maurice J. Manuel*, DE 351, and *Straus*, DE 408, on 1 May 1966 and *Cross*, DE 448, and *Hass*, DE 424, on 1 July 1966.

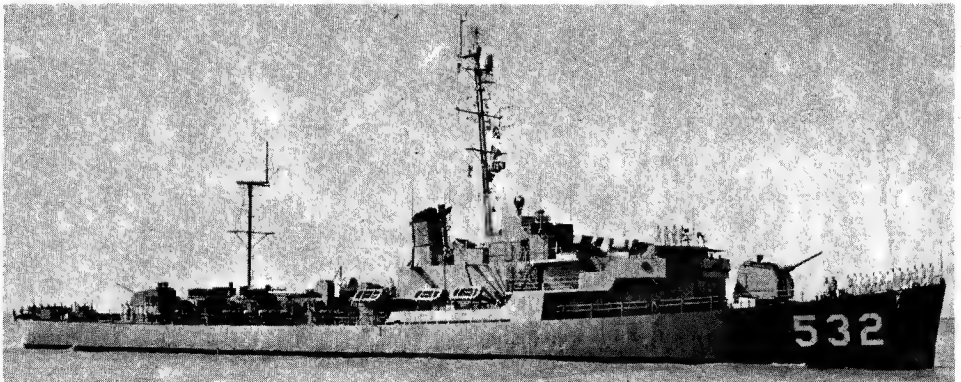
CASUALTIES. Second World War losses: *Eversole*, DE 404, *Oberrender*, DE 344, *Samuel B. Roberts*, DE 413, and *Shelton*, DE 407.

Name	No.	Builders	Launched	Completed
ABERCROMBIE	DE 343	Consolidated Steel Corp'n, Orange	14 Jan 1944	1 May 1944
ALBERT T. HARRIS	DE 447	Federal SB & DD Co, Pt Newark	16 Apr 1944	29 Nov 1944
ALVIN C. COCKRELL	DE 366	Consolidated Steel Corp'n, Orange	8 Aug 1944	7 Oct 1944
BIVIN	DE 536	Boston Naval Shipyard	7 Dec 1943	31 Oct 1944
CECIL J. DOYLE	DE 368	Consolidated Steel Corp'n, Orange	1 July 1944	16 Oct 1944
CHARLES E. BRANNON	DE 446	Federal SB & DD Co, Pt Newark	23 Apr 1944	1 Nov 1944
CHESTER T. O'BRIEN	DE 421	Brown SB Co, Houston	29 Feb 1944	3 July 1944
CONKLIN	DE 439	Federal SB & DD Co, Pt Newark	13 Feb 1944	21 Apr 1944
CORBESIER	DE 438	Federal SB & DD Co, Pt Newark	13 Feb 1944	31 Mar 1944
DENNIS	DE 405	Brown SB Co, Houston	4 Dec 1943	20 Mar 1944
DOYLE C. BARNES	DE 353	Consolidated Steel Corp'n, Orange	4 Mar 1944	13 July 1944
DUFILHO	DE 423	Brown SB Co, Houston	9 Mar 1944	21 July 1944
EDMONDS	DE 406	Brown SB Co, Houston	17 Dec 1943	3 Apr 1944
EDWARD H. ALLEN	DE 531	Boston Naval Shipyard	17 Oct 1943	16 Dec 1943
EDWIN A. HOWARD	DE 346	Consolidated Steel Corp'n, Orange	25 Jan 1944	25 May 1944
FRENCH	DE 367	Consolidated Steel Corp'n, Orange	17 June 1944	9 Oct 1944
GENTRY	DE 349	Consolidated Steel Corp'n, Orange	15 Feb 1944	14 June 1944
GEORGE E. DAVIS	DE 357	Consolidated Steel Corp'n, Orange	8 Apr 1944	11 Aug 1944
GILLIGAN	DE 508	Federal SB & DD Co, Pt Newark	22 Feb 1944	12 May 1944
GOSS	DE 444	Federal SB & DD Co, Pt Newark	19 Mar 1944	26 Aug 1944
GRADY	DE 445	Federal SB & DD Co, Pt Newark	2 Apr 1944	11 Sep 1944
HANNA	DE 449	Federal SB & DD Co, Pt Newark	4 July 1944	27 Jan 1945
HOWARD F. CLARK	DE 533	Boston Naval Shipyard	8 Nov 1943	25 May 1944
JACCARD	DE 355	Consolidated Steel Corp'n, Orange	18 Mar 1944	26 July 1944
JACK MILLER	DE 410	Brown SB Co, Houston	10 Jan 1944	13 Apr 1944
JESSE RUTHERFORD	DE 347	Consolidated Steel Corp'n, Orange	29 Jan 1944	31 May 1944
JOHN C. BUTLER	DE 339	Consolidated Steel Corp'n, Orange	11 Dec 1943	31 Mar 1944
JOHN L. WILLIAMSON	DE 370	Consolidated Steel Corp'n, Orange	29 Aug 1944	31 Oct 1944
JOHNNIE HUTCHINS	DE 360	Consolidated Steel Corp'n, Orange	2 May 1944	28 Aug 1944
JOSEPH E. CONNOLLY	DE 450	Federal SB & DD Co, Pt Newark	6 Aug 1944	28 Feb 1945
KENDALL C. CAMPBELL	DE 443	Federal SB & DD Co, Pt Newark	19 Mar 1944	31 July 1944
KENNETH M. WILLETT	DE 354	Consolidated Steel Corp'n, Orange	7 May 1944	19 July 1944
KEY	DE 348	Consolidated Steel Corp'n, Orange	12 Feb 1944	5 June 1944
LA PRADE	DE 409	Brown SB Co, Houston	31 Dec 1943	20 Apr 1944
LAWRENCE C. TAYLOR	DE 415	Brown SB Co, Houston	29 Jan 1944	13 May 1944
LE RAY WILSON	DE 414	Brown SB Co, Houston	28 Jan 1944	10 May 1944
LELAND E. THOMAS	DE 420	Brown SB Co, Houston	28 Feb 1944	19 June 1944
LLOYD E. ACREE	DE 356	Consolidated Steel Corp'n, Orange	21 Mar 1944	1 Aug 1944
MACK	DE 358	Consolidated Steel Corp'n, Orange	11 Apr 1944	16 Aug 1944
MELVIN R. NAWMAN	DE 416	Brown SB Co, Houston	7 Feb 1944	16 May 1944
MCGINTY	DE 365	Consolidated Steel Corp'n, Orange	5 Aug 1944	25 Sep 1944
O'FLAHERTY	DE 340	Consolidated Steel Corp'n, Orange	14 Dec 1944	8 Apr 1944
OLIVER MITCHELL	DE 417	Brown SB Co, Houston	8 Feb 1944	14 June 1944
OSBERG	DE 538	Boston Naval Shipyard	7 Dec 1943	17 Dec 1945
PRATT	DE 363	Consolidated Steel Corp'n, Orange	1 June 1944	18 Sep 1944
PRESLEY	DE 371	Consolidated Steel Corp'n, Orange	19 Aug 1944	7 Nov 1944
RAYMOND	DE 341	Consolidated Steel Corp'n, Orange	8 Jan 1944	15 Apr 1944
RICHARD M. ROWELL	DE 403	Brown SB Co, Houston	17 Nov 1943	9 Mar 1944
RICHARD S. BULL	DE 402	Brown SB Co, Houston	16 Nov 1943	26 Feb 1945
RICHARD W. SUESENS	DE 342	Consolidated Steel Corp'n, Orange	11 Jan 1944	26 Apr 1944
RIZZI	DE 537	Boston Naval Shipyard	7 Dec 1943	30 June 1944
ROBERT BRAZIER	DE 345	Consolidated Steel Corp'n, Orange	22 Jan 1944	18 May 1944
ROBERT F. KELLER	DE 419	Brown SB Co, Houston	11 Feb 1944	17 June 1944
ROLF	DE 362	Consolidated Steel Corp'n, Orange	23 May 1944	7 Sep 1944
ROMBACH	DE 364	Consolidated Steel Corp'n, Orange	6 June 1944	20 Sep 1944
SILVERSTEIN	DE 534	Boston Naval Shipyard	8 Nov 1943	14 July 1944
STAFFORD	DE 411	Brown SB Co, Houston	11 Jan 1944	19 Apr 1944
TABBERER	DE 418	Brown SB Co, Houston	18 Feb 1944	23 May 1944
THADDEUS PARKER	DE 369	Consolidated Steel Corp'n, Orange	26 Aug 1944	25 Oct 1944
TRAW	DE 350	Consolidated Steel Corp'n, Orange	14 Feb 1944	20 June 1944
TWEEDY	DE 532	Boston Naval Shipyard	7 Oct 1943	12 Feb 1944
WALTER C. WANN	DE 412	Brown SB Co, Houston	19 Jan 1944	2 May 1944
WALTON	DE 361	Consolidated Steel Corp'n, Orange	20 May 1944	4 Sep 1944
WILLIAM SEIEVERLING	DE 441	Federal SB & DD Co, Pt Newark	7 Mar 1944	1 June 1944
WILLIAMS	DE 372	Consolidated Steel Corp'n, Orange	22 Aug 1944	11 Nov 1944



RAYMOND

Skyfotos



TWEEDY

Added 1967, Official

Rated as Escort Ships (DE)

36 "Buckley" Group

Displacement, tons	1 400 standard; 2 170 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	14 (4.3)
Guns, dual purpose	3—3 in (76 mm) 50 cal. Some have 2—5 in (127 mm) 38 cal. see Gunnery
Guns, AA	8—40 mm
A/S	Some have trainable hedgehog in "B" position
Torpedo tubes	2 triple for A/S torpedoes in reserve training ships
Boilers	2 water tube (Foster Wheeler; Babcock & Wilcox; Combustion Eng.)
Main engines	GE geared turbines, electric drive 12 000 shp; 2 shafts
Speed, knots	24
Radius, miles	5 000 at 15 knots
Oil fuel (tons)	340
Complement	180
Accommodation	220

46 ships of this class were transferred in 1944 under Lend-Lease to the Royal Navy in which they served as frigates. Six of these were lost, and the remainder returned to USA for scrapping. Fifty more of the "Buckley" class were adapted as Fast Transports. *Marsh*, *Wiseman* and *Whitehurst*, as power supply ships, have two large reels for power cables amidships. *Fechtel* and *Underhill* were lost in the Second World War. *Solar* was destroyed by internal explosion on 30 Apr 1946.

ENGINEERING. All DEs have alternate engines and boiler rooms. What looks like a central uptake is really only a cylindrical support for the dual stack trunk.

CLASS.. Technically, in the "Buckley" group there are eight vessels of the "Coolbaugh" class, 21 ships of the "Lovelace" class, three units of the "Whitehurst" class, and one each of the "Cronin", "Frybarger", "Raby" and "Vammen" classes.

Cronin, *Frybarger* and *Raby* were redesignated DEC (escort vessels, control) on reassignment to amphibious forces, but *Cronin* and *Raby* were decommissioned to the Reserve Fleet in June 1953, and *Frybarger* was placed in the Reserve Fleet in June 1954; all three of these DECs were reclassified as DEs on 27 Dec 1957.

EXPERIMENTAL. *Vammen* was converted for anti-submarine warfare. *Maloy* was rated as EDE (experimental destroyer escort) until she was decommissioned and stricken in 1965. *Francis Robinson* and *Jack W. Wilkie* were also EDEs until 1960 when they were decommissioned.

CONVERSION. Seven of this class were converted to Radar Pickets (see previous page) but reverted to DE.

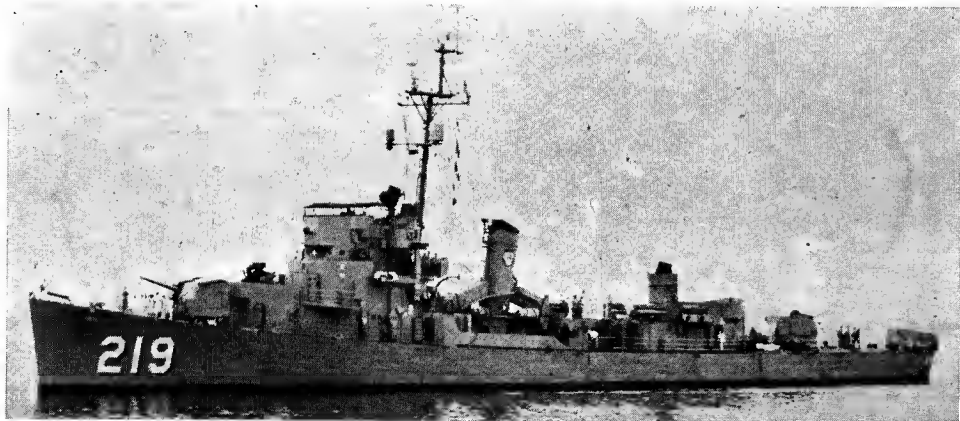
GUNNERY. *Coolbaugh*, *Currier*, *Darby*, *George*, *Greenwood*, *Harmon*, *J. Douglas Blackwood*, *Loeser*, *Osmus*, *Raby* and *Spangler* have 5 inch guns.

PHOTOGRAPHS. A transom view of *Maloy*, with experimental gear on the stern, appears in the 1957-58 edition, a starboard bow view of *Loeser* in the 1958-59 edition, a starboard broadside view of *Darby* in the 1955-56 to 1961-62 editions, a port quarter aerial oblique view of *Vammen* in the 1957-58, to 1961-62 editions, a port bow oblique aerial view of *Vammen* in the 1959-60 to 1961-62 editions, a starboard dead broadside surface view of *Coolbaugh* in the 1955-56 to 1963-64 editions, a port bow surface view of *Frybarger* in the 1957-58 to 1965-66 editions and a port broadside surface view of *Francis M. Robinson* in the 1960-61 to 1966-67 editions.

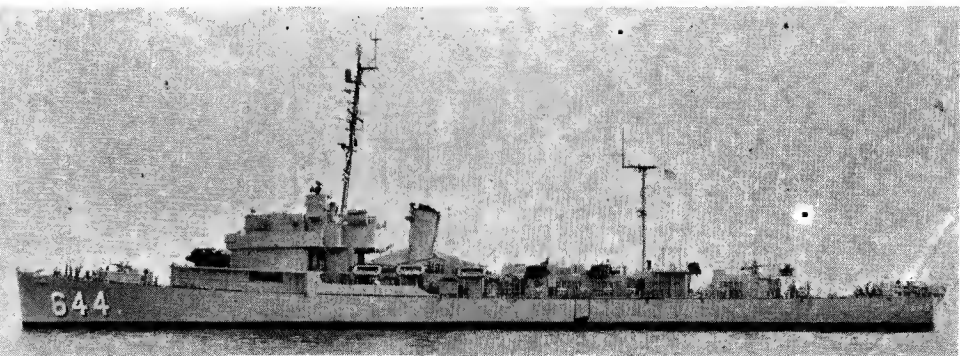
DISPOSALS
Ahrens, DE 575, *Borum*, DE 790, *Foreman*, DE 633, *Fowler*, DE 222, *Harmon*, DE 678, *Maloy*, DE 791, *Scott*, DE 214, and *Scroggins*, DE 799, were stricken in 1965. *Durik*, DE 666, was stricken on 1 June 1965, *Foss*, DE 59, on 1 Nov 1965, and *Jenks*, DE 665, on 1 Feb 1966. *Currier*, DE 700, and *Willmarth*, DE 638 were stricken on 1 Dec 1966, and *Greenwood*, DE 679, was stricken on 1 Mar 1967.

Destroyer Escorts—continued

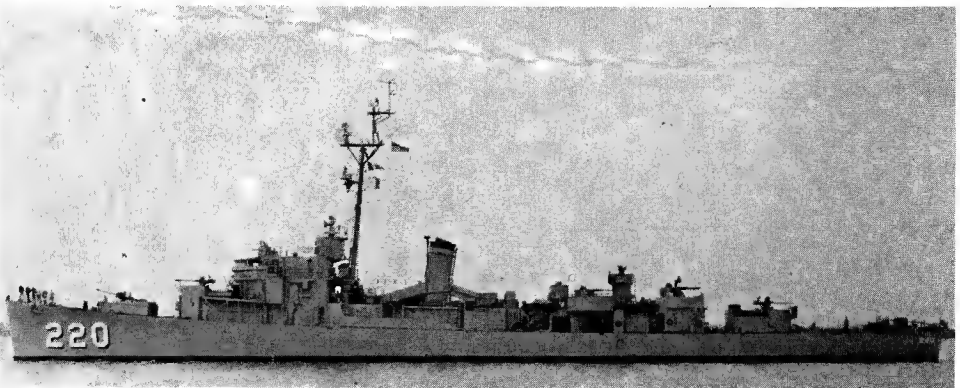
Name	No.	Builders	Launched	Completed
COOLBAUGH	217	Philadelphia Navy Yard	29 May 1943	15 Oct 1943
CRONIN	704	Defoe Co, Bay City, Mich	5 Jan 1944	4 May 1944
DAMON M. CUMMINGS	643	Bethlehem, San Francisco	18 Apr 1944	29 June 1944
DARBY	218	Philadelphia Navy Yard	29 May 1943	15 Nov 1943
EARL V. JOHNSON	702	Defoe Co, Bay City, Mich	12 Jan 1944	18 Mar 1944
EICHENBERGER	202	Charleston Navy Yard	22 July 1943	17 Nov 1943
FIEBERLING	640	Bethlehem, San Francisco	2 Mar 1944	11 Apr 1944
FRANCIS M. ROBINSON	220	Philadelphia Navy Yard	29 May 1943	15 Jan 1944
FRYBARGER	705	Defoe Co, Bay City, Mich	25 Jan 1944	18 May 1944
GENDREAU	639	Bethlehem, San Francisco	12 Dec 1943	17 Mar 1944
GEORGE	697	Defoe Co, Bay City, Mich	16 Feb 1943	20 Nov 1943
GILLETTE	681	Bethlehem, Quincy	25 Sep 1943	27 Oct 1943
GUNASON	795	Consolidated Steel Corpn, Orange	17 Oct 1943	1 Feb 1944
HENRY R. KENYON	683	Bethlehem, Quincy	30 Oct 1943	30 Nov 1943
HOLTON	703	Defoe Co, Bay City, Mich	15 Dec 1943	1 May 1944
JACK W. WILKE	800	Consolidated Steel Corpn, Orange	18 Dec 1943	7 Mar 1944
JAMES E. CRAIG	201	Charleston Navy Yard	22 July 1943	1 Nov 1943
J. DOUGLAS BLACKWOOD	219	Philadelphia Navy Yard	29 May 1943	15 Jan 1943
LOESER	680	Bethlehem, Quincy	11 Sep 1943	10 Oct 1943
LOVELACE	198	Norfolk Navy Yard	4 July 1943	7 Nov 1943
MAJOR	796	Consolidated Steel Corpn, Orange	23 Oct 1943	12 Feb 1944
MANNING	199	Charleston Navy Yard	1 Sep 1943	1 Oct 1943
MARSH	699	Defoe Co, Bay City, Mich	29 Jan 1943	12 Jan 1944
NEUNDORF	200	Charleston Navy Yard	18 Sep 1943	18 Oct 1943
OSMUS	701	Defoe Co, Bay City, Mich	4 Nov 1943	23 Feb 1944
OTTER	210	Charleston Navy Yard	23 Oct 1943	21 Feb 1944
PAUL G. BAKER	642	Bethlehem, San Francisco	12 Mar 1944	25 May 1944
RABY	698	Defoe Co, Bay City, Mich	4 Sep 1943	7 Dec 1943
SPANGLER	696	Defoe Co, Bay City, Mich	15 July 1943	31 Oct 1943
THOMASON	203	Charleston Navy Yard	24 Aug 1943	10 Dec 1943
VAMMEN	644	Bethlehem, San Francisco	21 May 1944	27 July 1944
VARIAN	798	Consolidated Steel Corpn, Orange	6 Nov 1943	29 Feb 1944
WEEDEN	797	Consolidated Steel Corpn, Orange	27 Oct 1943	19 Feb 1944
WHITEHURST	634	Bethlehem, San Francisco	5 Sep 1943	19 Nov 1943
WILLIAM C. COLE	641	Bethlehem, San Francisco	28 Dec 1943	12 May 1944
WISEMAN	667	Dravo Corpn, Pittsburgh	6 Nov 1943	4 Apr 1944



J. DOUGLAS BLACKWOOD (5-inch gunned type) 1965, courtesy Dr Ian S. Pearsall



VAMMEN (with main mast) 1962, courtesy Mr W. H. Davis



FRANCIS M. ROBINSON (3 inch gunned type) Added 1967, Official

Destroyer Escorts—continued

Rated as Escort Ships (DE)

42 "Edsall" Class

Displacement, tons	1 200 standard; 1 850 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	11 (3.4)
Guns,	3—3 in (76 mm) 50 cal.
Guns, AA	8—40 mm; 4—20 mm
A/S weapons	Considerable variations in the Class. Trainable hedgehog and 2 torpedo rack side launchers in some ships
Torpedo tubes	6 (2 triple) for A/S torpedoes abaft the funnel in <i>Snowden</i>
Main engines	4 FM diesels
	6 000 bhp; 2 shafts
Speed, knots	21
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	279
Complement	149
Accommodation	200

Name	No.	Builders	Launched	Completed
CHATELAIN	DE 149	Consolidated Steel Corpn	21 Aug 1943	22 Sep 1943
COCKRILL	DE 398	Brown SB Co, Houston	29 Oct 1943	24 Dec 1943
DALE W. PETERSEN	DE 337	Consolidated Steel Corpn	22 Dec 1943	17 Feb 1944
DANIEL	DE 335	Consolidated Steel Corpn	16 Nov 1943	24 Jan 1943
DOUGLAS L. HOWARD	DE 138	Consolidated Steel Corpn	25 Jan 1943	29 July 1943
EDSALL	DE 129	Consolidated Steel Corpn	1 Nov 1942	10 Apr 1943
FAROUHAR	DE 139	Consolidated Steel Corpn	13 Feb 1943	5 Aug 1943
HAMMAN (ex-Langley)	DE 131	Consolidated Steel Corpn	13 Dec 1942	17 May 1943
HERBERT C. JONES	DE 137	Consolidated Steel Corpn	19 Jan 1943	21 July 1943
HILL	DE 141	Consolidated Steel Corpn	28 Feb 1943	16 Aug 1943
HOWARD D. CROW	DE 252	Brown SB Co, Houston	26 Apr 1943	27 Sep 1943
HURST	DE 250	Brown SB Co, Houston	14 Apr 1943	30 Aug 1943
HUSE	DE 145	Consolidated Steel Corpn	23 Mar 1943	30 Aug 1943
INCH	DE 146	Consolidated Steel Corpn	4 Apr 1943	8 Sep 1943
JACOB JONES	DE 130	Consolidated Steel Corpn	29 Nov 1942	29 Apr 1943
JANSSEN	DE 396	Brown SB Co, Houston	10 Oct 1943	18 Dec 1943
J. RICHARD WARD	DE 243	Brown SB Co, Houston	6 Jan 1943	5 July 1943
J. R. Y. BLAKELEY	DE 140	Consolidated Steel Corpn	7 Mar 1943	16 Aug 1943
KEITH	DE 241	Brown SB Co, Houston	21 Dec 1942	19 July 1943
MARCHAND	DE 249	Brown SB Co, Houston	20 Mar 1943	8 Sep 1943
MENGES	DE 320	Consolidated Steel Corpn	15 June 1943	26 Oct 1943
MERRILL	DE 392	Brown SB Co, Houston	29 Aug 1943	27 Nov 1943
MOORE	DE 240	Brown SB Co, Houston	21 Dec 1942	1 July 1943
MOSLEY	DE 321	Consolidated Steel Corpn	26 June 1943	30 Oct 1943
NEUNZER	DE 150	Consolidated Steel Corpn	27 Apr 1943	27 Sep 1943
O'REILLY	DE 330	Consolidated Steel Corpn	2 Sep 1943	28 Dec 1943
PETERSON	DE 152	Consolidated Steel Corpn	15 May 1943	29 Sep 1943
PETTIT	DE 253	Brown SB Co, Houston	28 Apr 1943	23 Sep 1943
POOLE	DE 151	Consolidated Steel Corpn	8 May 1943	29 Sep 1943
POPE	DE 134	Consolidated Steel Corpn	12 Jan 1943	25 June 1943
PRIDE	DE 323	Consolidated Steel Corpn	3 July 1943	13 Nov 1943
RICHEY	DE 385	Brown SB Co, Houston	20 June 1943	30 Oct 1943
RICKETTS	DE 254	Brown SB Co, Houston	10 May 1943	5 Oct 1943
SLOAT	DE 245	Brown SB Co, Houston	21 Jan 1943	16 Aug 1943
SNOWDEN	DE 246	Brown SB Co, Houston	19 Feb 1943	23 Aug 1943
STANTON	DE 247	Brown SB Co, Houston	28 Feb 1943	7 Aug 1943
STEWART	DE 238	Brown SB Co, Houston	22 Nov 1942	31 May 1943
STOCKDALE	DE 399	Brown SB Co, Houston	30 Oct 1943	31 Dec 1943
SWASEY	DE 248	Brown SB Co, Houston	18 Mar 1943	31 Aug 1943
SWENNING	DE 394	Brown SB Co, Houston	13 Sep 1943	1 Dec 1943
TOMICH	DE 242	Brown SB Co, Houston	28 Dec 1942	26 July 1943
WILLIS	DE 395	Brown SB Co, Houston	14 Sep 1943	10 Dec 1943

Fessenden, Harveson, Joyce, Kirkpatrick, Otterstetter and Strickland of this class were converted to DER (Radar Picket Escort Vessels) in 1951, *Haverfield, Pillsbury, Savage, and Wilhoite* were converted to DER in 1954-55. *Calcaterra, Chambers, Falgout, Koiner, Lowe and Rhodes* were converted to DER in 1955-56, *Brister, Camp, Durant, Finch, Forster, Hissem, Kretchmer, Lansing, Price, Roy O'Hale, Silstrom and Vance* were converted to DER under the 1956 conversion programme. Six others were converted to DER under the Fiscal 1957 conversion programme (see next page). *Falgout, Finch, Forster, Koiner, Lowe and Newell*, transferred to the Coast Guard in 1951 and *Chambers, Durant, Lansing, Ramsden, Richey, Vance* in 1952, were returned to the Navy in 1954. War losses: *Fiske, Frederick C. Davis, Holder, Leopold*.

EXPERIMENTAL. The conversion programme for 1955 provided for replacing the diesel engines in the escort vessel *Mills* (DE 383) with two British RM 60 gas turbines designed to reduce plant weight by approximately 15 per cent, while delivering 67 per cent more power; but this project was abandoned and *Mills* was converted to DER (Radar Picket).

ANTI-SUBMARINE. *Peterson* was converted (see previous editions) for specialised anti-submarine warfare, that is limited conversion with additional sonar and depth charge equipment added. She recommissioned after conversion on 1 May 1952. She was decommissioned in 1965.

TORPEDO TUBES. The original 3—21 inch torpedo tubes were removed.

CONVERSION. The following vessels were redesignated from DE to DER and converted under the Fiscal Year 1957 Shipbuilding and Conversion Programme. *Blair* DE 147 to DER 147, *Mills* DE 383 to DER 383, *Newell* DE 322 to DER 322, *Ramsden* DE 382 to DER 382, *Sturtevant* DE 239 to DER 239, *Thomas J. Gary* DE 326 to DER 326. The conversion was carried out during 1956-58. 28 ships of this class were converted to Radar Pickets earlier, see full list under Converted "Edsall" class on following page.

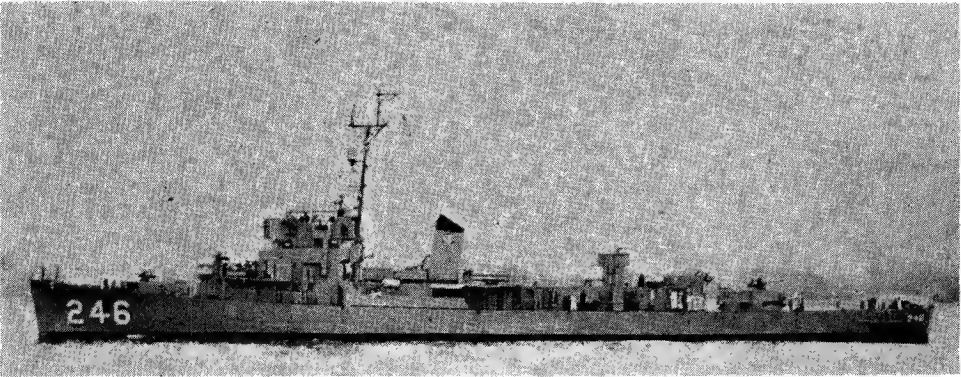
PHOTOGRAPHS. A port bow near broadside aerial view of *Peterson* as converted for anti-submarine warfare appears in the 1954-55 to 1965-66 editions, and a bow oblique aerial view of *Snowden* in the 1956-57 to 1965-66 editions.

DISPOSALS. *Flaherty*, DE 135, and *Frost*, DE 144, were stricken on 1 Apr 1965. *Brough*, DE 148, was stricken on 1 Nov 1965, *Martin H. Ray*, DE 338, on May 1 1966, and *Robert E. Peary*, DE 132, on 1 July 1966. *Tomich*, DE 242, is also to be disposed of in the near future.



HUSE

1966, Skyfotos



SNOWDEN (broadside)

1964, courtesy Dr Ian S. Pearsall

Escort Ships, Radar Picket (DER)

30 Converted "Edsall" Class

Displacement, tons	1 590 standard; 1 850 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	36.5 (11.1)
Draft, feet (metres)	14 (4.3) max
Guns, dual purpose	2—3 in (76 mm) 50 cal.
A/S	Trainable hedgehog; DC rack
Torpedo tubes	6 (2 triple) for A/S torpedoes
Main engines	4 FM diesels
	6 000 bhp; 2 shafts
Speed, knots	21
Radius, miles	11 500 at 11 knots
Oil fuel (tons)	300
Complement	150 (accommodation 187)

Originally rated as Destroyer Escorts (DE) but later grouped under the generic heading of Patrol Ships with the specific designation of Radar Picket Escort Ships.

ANTI-SUBMARINE WARFARE The armament installed for anti-submarine warfare included a hedgehog and two side launching torpedo racks later replaced in some, if not all, ships by six ASW torpedo tubes in triple mounts.

CONVERSION. *Fessenden, Harveston, Joyce, Kirkpatrick, Otterstetter* and *Strickland* were converted to DER in 1951, *Haverfield, Pillsbury, Savage* and *Wilhoite* in 1954-55, *Calcaterra, Chambers, Falgout, Koiner, Lowe, Rhodes*, in 1955-56, *Bristler, Camp, Durant, Finch, Forster, Hissem, Kretchmer, Lansing, Price, Roy O'Hale, Sellstrom, Vince* in 1956-57, *Blair, Mills, Newell, Ramsden, Sturtevant* and *Thomas J. Gary* in 1956-58. New equipment included air search, height finder and surface search radar, and they were rigged to detect enemy action at sea or in the air in any form. Conversion included improvement in habitability by installing the mess compartment on the main deck and most of the new superstructure was of aluminium to reduce top weight. Conversion *Blair*, DER 147, commenced on 2 Jan 1957 and was completed on 2 Jan 1958.

TORPEDO TUBES. The three 21 inch torpedo tubes originally carried were removed.

GUNNERY. Now have shields on the 3 inch gun mountings. The six 20 mm (3 twin) anti-aircraft guns formerly mounted were removed.

PHOTOGRAPHS. A starboard broadside view of *Koiner*, as converted to radar picket, appears in the 1957-58 (Diamond Jubilee) edition, a starboard bow view of *Pillsbury* in the 1957-58 to 1963-64 editions, a starboard broadside view of *Forster* in the 1957-58 to 1964-65 editions, and a port broadside view of *Wilhoite* in the 1958-59 to 1964-65 editions.

DISPOSALS *Pillsbury*, DER 133, was stricken on 1 July 1965, *Sellstrom*, DER 255, on 1 Nov 1965 and *Fessenden* and *Harveston* on 1 Sep 1965 and 1 Dec 1966, respectively, and sunk as targets.

Rated as Escort Ships (DE)

19 "Bostwick" Class

Displacement, tons	1 240 standard; 1 900 full load
Length, feet (metres)	306 (93.3) oa
Beam, feet (metres)	37 (11.3)
Draft, feet (metres)	14 (4.3)
Guns, dual purpose	3—3 in (76 mm) 50 cal.
Guns, AA	2—40 mm
A/S	Fixed hedgehog; DCT
Main engines	GM diesels, electric drive
	6 000 bhp; 2 shafts
Speed, knots	19
Radius, miles	1 500 at 11 knots
Oil fuel (tons)	300
Complement	150 (accommodation 220)

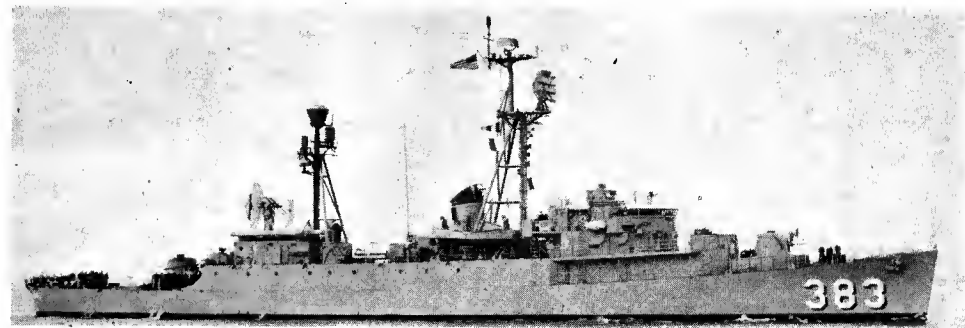
Originally rated as Destroyer Escorts (DE). Also known as the "Cannon" (DE 99) class.

PHOTOGRAPHS. A photograph of *Earl K. Olsen* appears in the 1953-54 to 1964-65 editions.

TRANSFER. Eight ships of this class were transferred to Brazil, four to China, 14 to France, *Ebert* (768), *Eldridge* (173), *Garfield Thomas* (193), and *Slater* (766) to Greece in 1951, *Burrows* (105), *Elsner* (192), *Gustafson* (182), *O'Neill* (188), *Rinehart* (196) and *Stern* (187) to Netherlands in 1950-51, *Gandy* (764), *Thornhill* (195), and *Wesson* (184) to Italy in 1951, *Bengust* (739), *Waterman* (740), and *Weever* (741) to Peru in 1952, *Baron* (166) and *Bronstein* (189) to Uruguay in 1951, *Amick*, DE 168, and *Atherton*, DE 169, to Japan in 1955. *Muir* (770) and *Sutton* (771) to South Korean Republic in 1956, *Hemminger*, DE 746, to Thailand in July 1959. *Booth*, DE 170, is to transfer to Philippines.

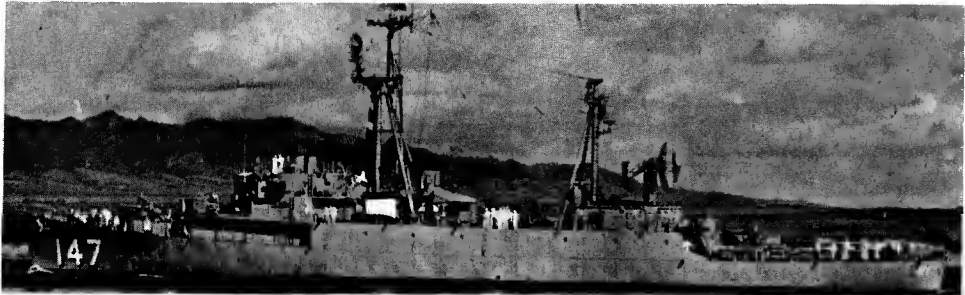
DISPOSALS *Carroll*, DE 171, and *Micka*, DE 176 were stricken on 1 Aug 1965.

Name	No.	Builders	Launched	Completed
BLAIR	DER 147	Consolidated Steel Corp	6 Apr 1943	13 Sep 1943
BRISTER	DER 327	Consolidated Steel Corp	24 Aug 1943	30 Nov 1943
CALCATERRA	DER 390	Brown SB Co, Houston	16 Aug 1943	17 Nov 1943
CAMP	DER 251	Brown SB Co, Houston	16 Apr 1943	16 Sep 1943
CHAMBERS	DER 391	Brown SB Co, Houston	17 Aug 1943	22 Nov 1943
DURANT	DER 389	Brown SB Co, Houston	3 Aug 1943	16 Nov 1943
FALGOUT	DER 324	Consolidated Steel Corp	24 July 1943	15 Nov 1943
FINCH	DER 328	Consolidated Steel Corp	28 Aug 1943	13 Dec 1943
FORSTER	DER 334	Consolidated Steel Corp	13 Nov 1943	25 Jan 1944
HAVERFIELD	DER 393	Brown SB Co, Houston	30 Aug 1943	29 Nov 1943
HISSEM	DER 400	Brown SB Co, Houston	26 Dec 1943	13 Jan 1944
JOYCE	DER 317	Consolidated Steel Corp	26 May 1943	30 Sep 1943
KIRKPATRICK	DER 318	Consolidated Steel Corp	5 June 1943	23 Oct 1943
KOINER	DER 331	Consolidated Steel Corp	5 Sep 1943	27 Dec 1943
KRETCHMER	DER 329	Consolidated Steel Corp	31 Aug 1943	13 Dec 1943
LANSING	DER 388	Brown SB Co, Houston	3 Aug 1943	10 Nov 1943
LOWE	DER 325	Consolidated Steel Corp	28 July 1943	22 Nov 1943
MILLS	DER 383	Brown SB Co, Houston	26 May 1943	12 Oct 1943
NEWELL	DER 322	Consolidated Steel Corp	29 June 1943	30 Oct 1943
OTTERSTETTER	DER 244	Brown SB Co, Houston	19 Jan 1943	6 Aug 1943
PRICE	DER 332	Consolidated Steel Corp	30 Oct 1943	12 Jan 1944
RAMSDEN	DER 382	Brown SB Co, Houston	24 May 1943	19 Oct 1943
RHODES	DER 384	Brown SB Co, Houston	29 June 1943	25 Oct 1943
ROY O'HALE	DER 336	Consolidated Steel Corp	20 Nov 1943	3 Feb 1944
SAVAGE	DER 386	Brown SB Co, Houston	15 July 1943	29 Oct 1943
STRICKLAND	DER 333	Consolidated Steel Corp	2 Nov 1943	10 Jan 1944
STURTEVANT	DER 239	Brown SB Co, Houston	3 Dec 1942	16 June 1943
THOMAS J. GARY	DER 326	Consolidated Steel Corp	21 Aug 1943	27 Nov 1943
VANCE	DER 387	Brown SB Co, Houston	16 July 1943	1 Nov 1943
WILHOITE	DER 397	Brown SB Co, Houston	5 Oct 1943	16 Dec 1943



MILLS

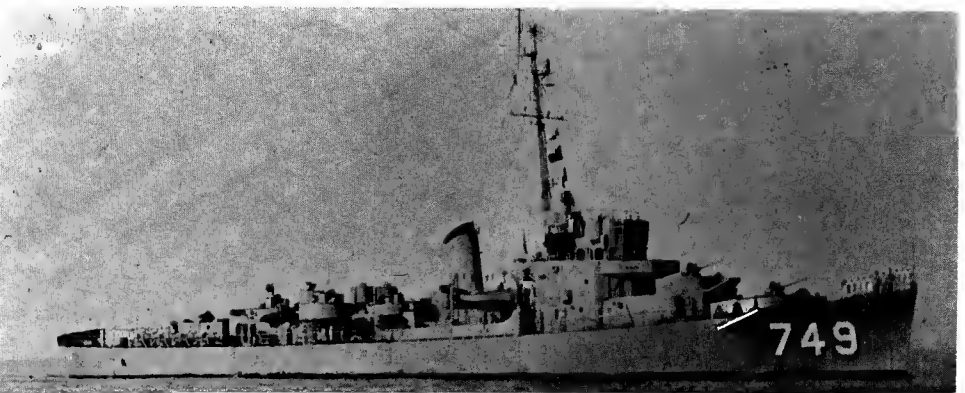
April 1965, Wright & Logan



BLAIR

Added 1965, United States Navy, Official

Name	No.	Builders	Launched	Completed
ACREE	DE 167	Federal SB & DD Co, Pt Newark	9 May 1943	19 July 1943
COFFMAN	DE 191	Federal SB & DD Co, Pt Newark	28 Nov 1943	27 Dec 1943
COONER	DE 172	Federal SB & DD Co, Pt Newark	25 July 1943	21 Aug 1943
EARL K. OLSEN	DE 765	Tampa SB Co	13 Feb 1944	10 Apr 1944
HILBERT	DE 742	Western Pipe & Steel Co	18 July 1943	4 Feb 1944
KYNE	DE 744	Western Pipe & Steel Co	15 Aug 1943	4 Apr 1944
LAMONS	DE 743	Western Pipe & Steel Co	1 Aug 1943	29 Feb 1944
LEVY	DE 162	Federal SB & DD Co, Pt Newark	28 Mar 1943	13 May 1943
MCLELLAND	DE 750	Western Pipe & Steel Co	28 Nov 1944	19 Sep 1944
MCDONNELL	DE 163	Federal SB & DD Co, Pt Newark	28 Mar 1943	28 May 1943
NEAL A. SCOTT	DE 769	Tampa SB Co	4 June 1944	31 July 1944
OSTERHOUS	DE 164	Federal SB & DD Co, Pt Newark	18 Apr 1943	12 June 1943
OSWALD	DE 767	Tampa SB Co	25 Apr 1944	12 June 1944
PARKS	DE 165	Federal SB & DD Co, Pt Newark	18 Apr 1943	22 June 1944
ROBERTS	DE 749	Western Pipe & Steel Co	14 Nov 1943	2 Sep 1944
SNYDER	DE 745	Western Pipe & Steel Co	29 Aug 1943	5 May 1944
STRAUB	DE 181	Federal SB & DD Co, Pt Newark	18 Sep 1943	25 Oct 1943
TILLS	DE 748	Western Pipe & Steel Co	3 Oct 1943	8 Aug 1944
TRUMPETER	DE 180	Federal SB & DD Co, Pt Newark	18 Sep 1943	25 Oct 1943



ROBERTS

Added 1965, United States Navy, Official

Rated as
High Speed Transports (APD)
23 Converted Destroyer Escorts

MODIFIED DESTROYER ESCORTS

No.	Ex-No.		Launched
APD	DE		
132	716	BALDUCK	27 Oct 1944
57	161	BARBER	20 May 1943
73	672	BASSETT	15 Jan 1944
127	711	BEGOR	25 May 1944
119	722	BEVERLY W. REID	4 Mar 1944
48	69	BLESSMAN	19 June 1943
65	215	BURKE	3 Apr 1943
130	714	COOK	26 Aug 1944
123	690	DIACHENKO	15 Aug 1944
43	62	GEORGE W. INGRAM	8 May 1943
86	794	HOLLIS	11 Sep 1943
124	691	HORACE A. BASS	12 Sep 1944
61	207	KEPHART	6 Sep 1943
90	229	KIRWIN	16 June 1944
101	591	KNUDSON	5 Feb 1944
55	159	LANING	4 July 1943
60	206	LIDDLE	9 Aug 1943
70	669	PAVLIC	18 Dec 1943
100	590	RINGNESS	5 Feb 1944
89	228	RUCHAMKIN	15 June 1944
76	676	SCHMITT	29 May 1943
135	719	WEISS	17 Feb 1945
95	236	WILLIAM M. HOBBY	11 Feb 1944

Displacement, tons 1 400 standard; 2 130 full load
Length, feet (metres) 300 (91.4) wl; 306 (93.3) oa
Beam, feet (metres) 37 (11.3)
Draft, feet (metres) 12.7 (3.9)
Guns, dual purpose 1—5 in (127 mm) 38 cal.
Guns, AA 4 to 8—40 mm
Torpedo tubes 6 (2 triple) short tubes for A/S torpedoes amidships in some
Boilers 2 Express
Main engines GE geared turbines, electric drive
12 000 shp; 2 shafts
Speed, knots 23.6
Radius, miles 5 500 at 15 knots
Oil fuel (tons) 350
Complement 204, plus 162 troops

Former destroyer escorts converted, and officially rated as High Speed Transports. They can carry four LCVP (Landing Craft Vehicle-Personnel). War loss: *Bates* (APD 47, ex-DE 68). Three, *Chase* APD 54 (DE 158), *England* APD 41 (DE 635) and *Witter* (APD 58), (DE 636) were scrapped after the Second World War. *Kirwin*, APD 90, recommissioned on 15 Jan 1965, and *Beverly W. Reid*, APD 119, on 18 Mar 1967 to replace *Liddle*, APD 60, to be decommissioned.

MODERNISATION. *Ruchamkin*, *Weiss* (see photographs) and others have undergone FRAM conversions.

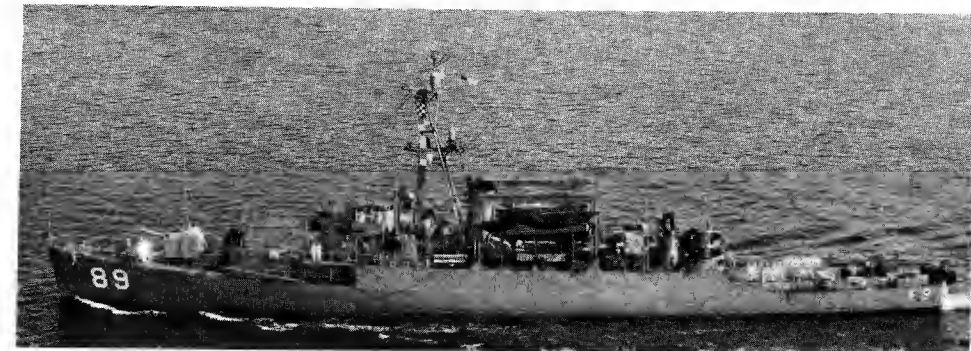
FLAGSHIP CONVERSION. *Laning* (55), *Lloyd* (63) *Hollis* (86), *Knudson* (101), *Cavallero* (128), *Cook* (130) and *Balduck* (132) underwent limited conversion into APD flagships with staff quarters and additional facilities for officers.

APPEARANCE. The ships originally converted into high speed transports from the destroyer escorts of the "Buckley" class retained the high bridge, but were given a 5-inch gunhouse forward and a lattice mainmast for twin cargo booms.

NOMENCLATURE. APD 98 (ex-*Truxtun*, DE 282) had her name withdrawn, since no two naval ships can have the same name, the name *Truxtun* having been assigned to DLGN 35 in 1963.

PHOTOGRAPHS. A photograph of *Lloyd* appears in the 1953-54 to 1964-65 editions, of *Cook* in the 1957-58 and 1958-59 editions, and of *Knudson* in the 1959-60 to 1964-65 editions.

TRANSFERS. *Cavallero*, APD 128, was transferred to Korea in Oct 1959, at Long Beach, California, and renamed *Kyung Nam*. *Kleinsmith*, APD 134, was transferred to Taiwan China in May 1960, and renamed *Tien Shan*. *Bowers*, APD 40, transferred to the Philippines on 21 Apr 1961, capsized in a storm at Cavite, but was raised and scrapped (sold to Mitsubishi Int Corp on 31 Jan 1966). *Brock*, *Myers* and *Upham* were sold to Columbia, and *Crosley*, *Frument*, *Hunter Marshall*, *Reeves* and *Walter S. Gorka* were sold to Ecuador in 1961-62 and converted into power plants. *Belet*, APD 109, *Don O. Woods*, APD 118, *Earheart*, APD 113, and *Joseph M. Amman*, APD 117, were sold to Mexico in May and June 1964. *Tollberg*, APD 103, was transferred to Colombia in 1965, and *Kinzer*, APD 91, and *Donald W. Wolf*, APD 129, to Taiwan China. *Harry L. Corl*, APD 108 and *Julius A. Raven*, APD 110, were stricken on 15 Jan 1966 and transferred to Korea. *Gantner*, APD 42, *Kline*, APD 120, ex-*Truxtun*, APD 98, and *Walter B. Cobb*, APD 106, were stricken on 15 Jan 1966 and subsequently transferred to Taiwan China, but *Walter B. Cobb* was lost at sea while under tow to Taiwan and *Bull*, APD 78, was sold to Taiwan as a replacement for her; *Raymond W. Herndon*, APD 121, and *Register* APD 92 transferred to Taiwan China in Sep 1966. *Daniel T. Griffin*, APD 38, *Jack C. Robinson*, APD 72, and *Odum*, APD 71, to Chile in Nov 1966, *Enright* APD 66 to Ecuador in the 1967, *Hayter*, APD 80 scheduled for Philippines. *Hubbard*, APD 53 and *Walsh*, APD 111, were stricken on 1 May 1966 for transfer, and *Rednour*, APD 102, Mar 1967.



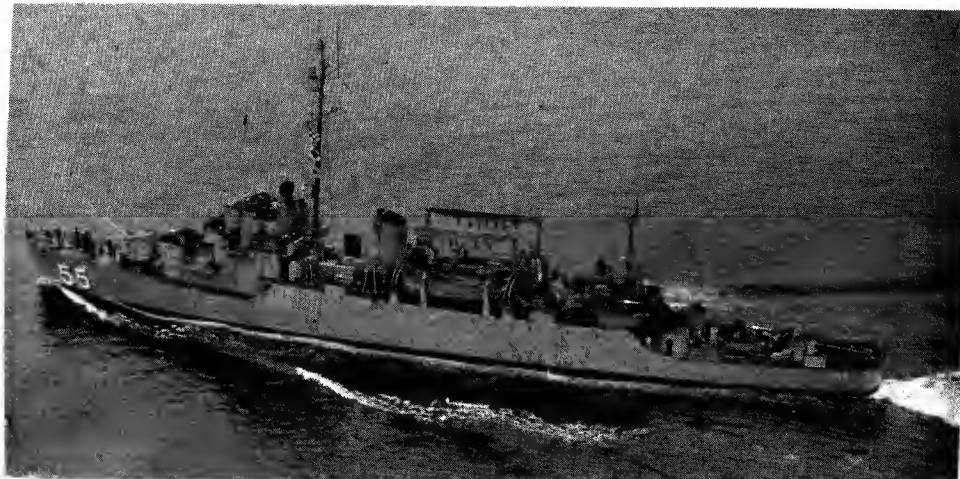
RUCHAMKIN

1965, United States Navy, Official



WEISS

1965, United States Navy, Official



LANING (APD Flagship)

1964, courtesy "Our Navy"

DISPOSALS

Wantuck, APD 125, was stricken from the Navy List on 4 Mar 1958 after collision with an attack transport (APA). *Carpellotti*, APD 136, was stricken on 1 Dec 1960. *Amesbury*, APD 46, *Barr*, APD 39, *Bray*, APD 139, *Brock* APD 93, *Cread*, APD 88, *Crosley*, APD 87, *Frument*, APD 77, *Haines*, APD 84, *Hunter Marshall*, APD 112, *Ira Jeffrey*, APD 44, *John Q. Roberts*, APD 94, *Myers*, APD 105, *Ray K. Edwards*, APD 96, *Reeves*, APD 52, *Rogers Blood*, APD 105, *Punels*, APD 85, *Sims*, APD 50, *Tatum*, APD 81, *Upham*, APD 99, *Walter S. Gorka*, APD 114, *Webber*, APD 75, and *William J. Pattison*,

APD 104, were stricken at the end of 1960, and *Walter X. Young*, APD 131, in 1962 (used as Pacific Missile Range target ship). *Bray* APD 139, was expended as a target on 26 Mar 1963. *Arthur L. Bristol*, APD 97, *Bunch*, APD 79, *Francovich*, APD 116, *Gosselin*, APD 126, and *Yokes*, APD 69, were stricken on 1 Apr 1964. *Charles Lawrence*, APD 37, *Earle B. Hall*, APD 107, *Hopping*, APD 51, *Lee Fox*, APD 45, *Loy*, APD 56, and *Newman*, APD 59, were stricken in 1965. *Burdo*, APD 133, and *Cofer*, APD 62, were stricken on 1 Apr 1966, and *Lloyd*, APD 63, on 1 June 1966. *Joseph E. Campbell* on 1 Dec 1966, *John P. Gray* on 1 Mar 1967.

ASSAULT SHIPS

Officially Rated as
Amphibious Transports Dock (LPD)

10 "Cleveland" Class

Displacement, tons 10 000 light; 17 150 full load
Length, feet, (metres) 562 (171.3) pp; 570 (173.7) oa
548 (166.0) wl
Beam, feet (metres) 84 (25.6)
Draft, feet (metres) 23 (7.0)
Aircraft 6 assault helicopters
Guns, dual purpose 8—3 in (76 mm) 50 cal., 4 twin
Main engines Steam turbines
24 000 shp; 2 shafts
Speed, knots 20
Complement 513

A new class larger than the "Raleigh" class, with the ability to carry both landing craft and transport helicopters together with B40 combat troops and their equipment, and 3 900 tons of cargo; and designed to operate helicopters which will land heavier combat equipment needed by troops landed from the ship and provide landing craft for over-the-beach assault. All this class are fitted as flagships.

CONSTRUCTION. LPDs 7, 9 and 10 were authorised in the Fiscal Year 1963 Programme. LPDs 7 and 9 were the first to be awarded to a private firm, a fixed price contract of \$51 458 000 for the two ships, announced on 25 Jan 1963. The award of a fixed price contract for LPDs 9 and 10 of \$50 445 000 was announced on 22 May 1963. The construction of three more LPDs (11, 12, 13) was authorised in the 1964 Programme, to cost \$69 774 000. Two more (14, 15) were in the 1965 Programme, and one in the 1966 Programme. Lockheed Shipbuilding and Construction Co, Seattle, was formerly Puget Sound Bridge & Dry Dock Co.

Name	No.	Builders	Laid down	Launched	Commissioned
CLEVELAND	LPD 7	Ingalls Shipbuilding Co, Pascagoula	30 Nov 1964	7 May 1966	21 Apr 1967
DUBUQUE	LPD 8	Ingalls Shipbuilding Co, Pascagoula	25 June 1965	6 Aug 1966	
DENVER	LPD 9	Lockheed SB & Construction Co	7 Feb 1964	23 Jan 1965	
JUNEAU	LPD 10	Lockheed SB & Construction Co	23 Jan 1965	12 Feb 1966	
CORONADO	LPD 11	Lockheed SB & Construction Co	3 May 1965	30 July 1966	
SHREVEPORT	LPD 12	Lockheed SB & Construction Co	27 Dec 1965	22 Oct 1966	
NASHVILLE	LPD 13	Lockheed SB & Construction Co	14 Mar 1966		
TRENTON	LPD 14	Lockheed SB & Construction Co	8 Aug 1966		
PONCE	LPD 15	Lockheed SB & Construction Co	31 Oct 1966		
	LPD 16	Lockheed SB & Construction Co			



CLEVELAND 1967, United States Navy, Official

6 "Raleigh" Class

Displacement, tons 8 040 light; 13 900 full load
Length, feet (metres) 500 (152.4) wl; 522 (159.7) oa; 535 (163.7) with gates open
Beam, feet (metres) 84 (25.6)
Draft, feet (metres) 23 (7.0)
Aircraft 6 UH-34 transport helicopters
Landing craft 1 LCU, and 3 to 6 LCM(6)'s
Guns, dual purpose 8—3 in (76 mm) 50 cal., 4 twin
Boilers 2 Babcock & Wilcox
Main engines Steam turbines
24 000 shp; 2 shafts
Speed, knots 21
Complement 490 (30 officers, 460 men)

Raleigh was the prototype of a new "all purpose" amphibious class, described as excellent ships, which employ the "balanced load" concept. Previous amphibious task forces carried troops in one type of ship, cargo in another, assault craft and tanks in others. These ships carry all these components. In addition they operate troop and cargo-carrying helicopters to project assault forces inland in support of the landing beaches. They have a new type of hull combining features of both an attack transport and an attack cargo ship with the basic hull of the LSDs, but with a shortened and covered well. They carry landing craft in the covered well, the roof of which as a helicopter landing platform, and launch their landing craft from either floating or roll on/roll off when in stopped position, or when moving by floating out of the well. Each can accommodate 930 to 1 000 marines and their equipment, and carry 2 000 tons of cargo. Unlike LPHs and LSDs, these ships cannot strike helicopters below. La Salle has an additional level for flag quarters and command spaces.

CONSTRUCTION. Raleigh was authorised in the Fiscal Year 1959 New Construction Programme, and Vancouver in the 1960 Programme. Cost \$29 000 000. La Salle was authorised in the 1961 Programme, Austin, Duluth and Ogden in the 1962 Programme. Cost \$41 000 000.

Name	No.	Builders	Laid down	Launched	Commissioned
RALEIGH	LPD 1	New York Naval Shipyard, Brooklyn	23 June 1960	17 Mar 1962	8 Sep 1962
VANCOUVER	LPD 2	New York Naval Shipyard, Brooklyn	19 Nov 1960	15 Sep 1962	11 May 1963
LA SALLE	LPD 3	New York Naval Shipyard, Brooklyn	2 Apr 1962	3 Aug 1963	22 Feb 1964
AUSTIN	LPD 4	New York Naval Shipyard, Brooklyn	4 Feb 1963	27 June 1964	6 Feb 1965
OGDEN	LPD 5	New York Naval Shipyard, Brooklyn	4 Feb 1963	27 June 1964	19 June 1965
DULUTH	LPD 6	New York Naval Shipyard, Brooklyn	18 Dec 1963	14 Aug 1965	12 Apr 1966



OGDEN 1967, Official

NOMENCLATURE. Amphibious transport docks are named after United States cities the namesakes of which were explorers and developers of America. Some of the names were previously borne by cruisers. PHOTOGRAPHS. A starboard bow oblique aerial view of Raleigh appears in the 1963-64 edition, a port quarter oblique aerial view of Vancouver in the 1963-64 and 1964-65 editions, a port bow oblique overhead view of Raleigh in the 1964-65 to 1966-67 editions, a starboard broadside surface view of Vancouver in the 1963-64 to 1966-67 editions, and a port bow oblique aerial view of La Salle in the 1965-66 1966-67 editions.



AUSTIN 1967, Official

GUIDED MISSILE SHIP (AVM) and SEAPLANE TENDERS (AV)

2 "Currituck" Class

NORTON SOUND CURRITUCK	AVM 1 (ex-AV 11) AV 7	Launched 28 Nov 1943
		11 Sep 1943
Displacement, tons	9 106 standard; 15 092 full load	
Length, feet (metres)	520 (158.5) wl; 540.5 (164.7) oa	
Beam, feet (metres)	69.2 (21.1)	
Draft, feet (metres)	26 (7.9)	
Guns, dual purpose	4—5 in (127 mm) 38 cal. (no guns in <i>Norton Sound</i>)	
Boilers	4 Babcock & Wilcox	
Main engines	Geared turbines:— Parsons in <i>Currituck</i> , Allis-Chalmers <i>Norton Sound</i> 12 000 shp; 2 shafts	
Speed, knots	19.2	
Complement	<i>Norton Sound</i> 531 (38 officers and 493 men)	

Currituck was built by Philadelphia Navy Yard, *Norton Sound* by Todd Shipyards, Los Angeles. *Currituck* was modernised under the 1957 conversion programme at Philadelphia Naval Shipyard and was commissioned on 20 Aug 1960. *Norton Sound* was adapted as the Navy's seagoing rocket laboratory ship and equipped for experiments with guided missiles. Two forward 5-inch guns were removed to make space for helicopter platform; and her stern crane was removed. In 1960 *Norton Sound* was assigned to the Operational Test and Evaluation Force. She was fitted with a launcher for "Tartar" guided missile testing. In 1963 her "Typhon" conversion began at Maryland Shipbuilding and Drydock Company, Baltimore, Maryland, and she recommissioned on 20 June 1964. *Norton Sound* has served as a sea-going test platform for various other missile systems since 1949.

GUIDED MISSILE CONVERSION. The 1963 conversion provided for the installation in *Norton Sound* of the prototype "Typhon" air defence system for test and evaluation purposes. This shipboard installation was considered at the time to be a necessary step in the development of the ultimate "Typhon" weapons system which was scheduled for installation in the nuclear powered guided missile frigate of the Fiscal Year 1963 new construction programme. But the "Typhon" weapons system was cancelled as being too bulky, costly, and ineffective. However, the "Typhon" radar system was installed and underwent evaluation. Prototype designed to meet aircraft and missile threats of the 1970s. Single high power radar will automatically and simultaneously search, track, acquire target, and guide missiles. High speed digital computers.

DISPOSALS

Sister ships *Pine Island*, AV 12, and *Salisbury Sound*, AV 13, were transferred to the Maritime Administration Reserve Fleet in 1967. *Currituck* will be decommissioned when seaplanes are phased out in 1968.

Aircraft Repair Ship (Helicopter)

CORPUS CHRISTI BAY, T-ARVH 1 (ex-*Albermarle*, AV 5)

Displacement, tons	8 671 standard; 13 475 full load
Length, feet (metres)	508 (154.8) wl; 537 (163.7) oa
Beam, feet (metres)	69.2 (21.1)
Draft, feet (metres)	21.3 (6.5)
Boilers	4 Babcock & Wilcox Express
Main engines	Parsons geared turbines 12 000 shp; 2 shafts
Speed, knots	19.7
Complement	150 (25 officers and 125 men) plus 300 army personnel

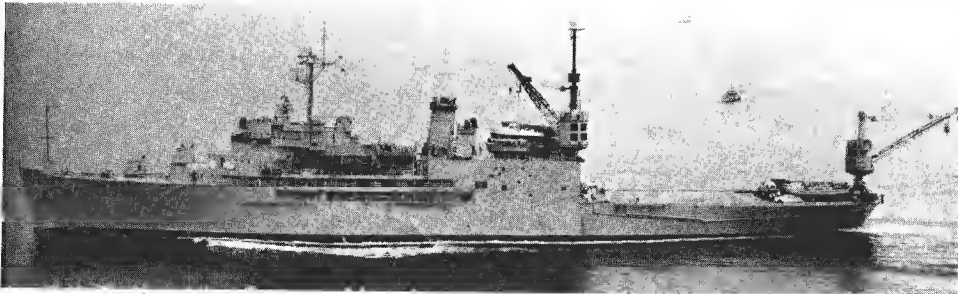
Built as a large seaplane tender by the New York Shipbuilding Corporation, New Jersey, under the 1937 Fiscal Year Programme, with space for Flag and Fleet Air Wing staffs. Launched on 13 July 1940.

Underwent modernisation and conversion under the 1956 Fiscal Year Programme to handle larger jet seaplanes at Philadelphia Navy Shipyard, and was provided with stern ramps, servicing booms, semi-sheltered area, and a service drydock for seaplanes, being recommissioned on 21 Oct 1957. Decommissioned in 1960, and placed in the custody of the Maritime Administration National Defence Reserve Fleet. Stricken from the Navy List in Sep 1962. But in Aug 1964 she was reacquired by the Navy from the Maritime Administration Reserve Fleet for conversion to aeronautical maintenance facility at



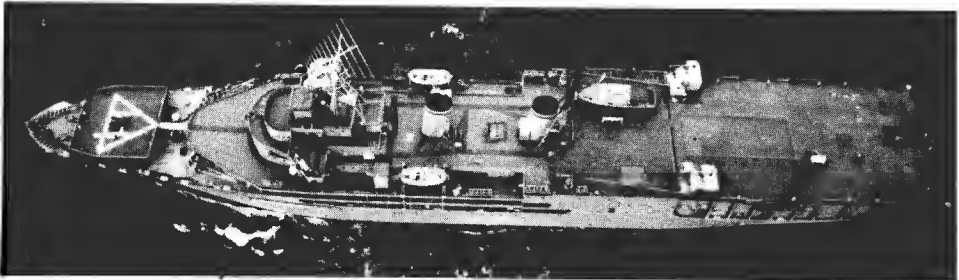
NORTON SOUND

1967, Official



CURRITUCK

1967, Official



CORPUS CHRISTI BAY

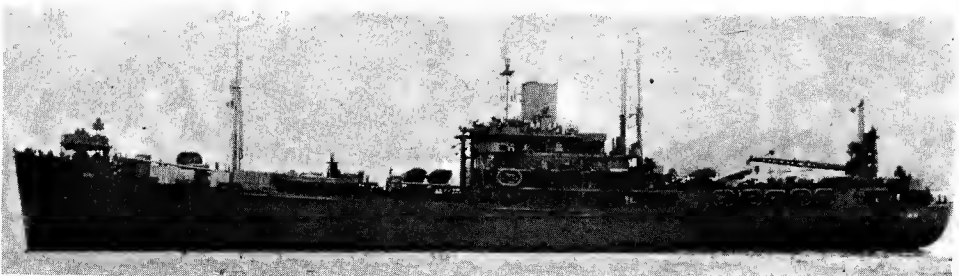
1967, USAF, Official

Charleston Naval Shipyard and completion in Dec 1965 with US Army Helicopter Maintenance Battalion for employment in SE Asia. Renamed USNS *Corpus Christi Bay* and redesignated T-ARVH 1 on 27 Mar 1965. She was reactivated and assigned to MSTs with civil service crew. Equipped to repair light Army aircraft and helicopters at sea or in port, but primarily for such repairs in the Vietnam area, US Army personnel man the maintenance and machine shops. Fitted with helicopter platforms forward and aft, aircraft hangar over former seaplane deck aft, and 22-ton cranes to hoist planes on board. Provides

maintenance in Vietnam forward areas for Army aircraft. Operated by the Military Sea Transportation Service. Reclassified as Aircraft Repair Ship (Helicopter) in 1966.

DISPOSALS

Sister ship *Curtiss* (see photograph in the 1957-58 to 1964-65 editions), modified for use by the Atomic Energy Commission, was transferred to the Maritime Administration in 1963. For disposals of "Kenneth Whiting" and "Tangier" classes of seaplane tenders see 1966-67 and earlier editions.



CHANDELEUR

Added 1965, United States Navy, Official

CHANDELEUR AV 10

Displacement, tons	9 031 standard; 14 200 full load
Dimensions, feet	492 oa x 69.5 x 23.8
Guns	1—5 in, 38 cal; 4—3 in, 50 cal
Main engines	GE geared turbines; 1 shaft; 8 500 shp = 18.4 knots
Boilers	2 Foster-Wheeler

Launched on 29 Nov 1941. Maritime Commission type C3-51-B1. Retained as accommodation ship for Ships' Maintenance Facility at Philadelphia.

FLEET MINELAYER (MMF)

Name	No.	Builders	Laid down	Launched	Completed
TERROR	MMF 5 (ex-MM 5, ex-CM 5)	Philadelphia Navy Shipyard	3 Sep 1940	6 June 1941	15 July 1942

1 Large Type Formerly rated as
Cruiser Minelayer (CM)

Displacement, tons	5 875 standard; 8 650 full load
Length, feet (metres)	454 (138.4) oa
Beam, feet (metres)	60.2 (18.4)
Draft, feet (metres)	20 (6.1)
Guns, dual purpose	4—5 in (127 mm) 38 cal. singles
Guns, AA	24—40 mm, 6 quadruple
Mines	800 capacity
Boilers	4
Main engines	Geared turbines
	11 000 shp; 2 shafts
Speed, knots	20
Complement	400
Accommodation	114 officers, 450 men

Authorised under the 1938 Fiscal Year New Construction Programme, Mine ports in stern. Cruiser type with high freeboard. In Atlantic Reserve Fleet. Texas Group Tender and Headquarters Ship.

RECLASSIFICATION. Formerly classified as a Large (Cruiser) Minelayer (CM) but reclassified as a Fleet Minelayer (MM) in Feb 1955 and redesignated MMF in 1956.



TERROR

United States Navy, Official

MINE COUNTERMEASURES SUPPORT SHIPS (MCS)

Name	No.	Builders	Launched	Completed	Conversion
CATSKILL	MCS 1 (ex-LSV 1, ex-CM 6, ex-AP 106)		19 May 1942	30 June 1944	Boland Machine & Manufacturing Co, New Orleans, Louisiana
OZARK	MSC 2 (ex-LSV 2, ex-CM 7, ex-AP 107)		15 June 1942	23 Sep 1944	Norfolk Shipbuilding & Dry Dock Corpn, Norfolk, Virginia

2 Converted Large Minelayer Type

Displacement, tons	5 875 standard; 9 040 full load
Length, feet (metres)	440 (134.1) wl, 455.5 (138.8) oa
Beam, feet (metres)	60.2 (18.4)
Draft, feet (metres)	20 (6.1)
Guns, dual purpose	2—5 in (127 mm) 3B cal.
Guns, AA	8—40 mm
Boilers	4 combustion Eng. "D" type
Main engines	GE geared turbines
	11 000 shp; 2 shafts
Speed, knots	20.3
Accommodation	564 (114 officers, 450 men)

Both built by Willamette Iron & Steel Corpn, Portland, Oregon, under the 1940 Programme and laid down on 12 July, 1941. Designed as Large Minelayers, but subsequently converted into Landing Ships (Vehicle), LSV. Reclassified as Mine Warfare Command and Support ships and redesignated MCS in 1955. Again reclassified as Mine Countermeasures and Support Ships in 1958, and as Mine Countermeasures Support Ships on 25 Aug 1960. Stricken from the Navy List on 1 Sep 1961, but reinstated on 1 Oct 1963 (*Ozark*) and 1 June 1964 (*Catskill*) and converted into the new conception of Mine Countermeasures Support Ships under the Fiscal Year 1963 (*Ozark*) and 1964 (*Catskill*) Shipbuilding and Conversion Programmes, for commissioning on 24 June 1966 and June 1967 respectively.

CONVERSION. It is officially stated that each conversion of the former Vehicle Landing Ship (LSV) type will be capable of transporting, maintaining, operating and supporting twenty 36-foot minesweeping launches (MSL) and two helicopter minesweepers. These capabilities will provide a high degree of mobility to minesweeping operations. They will be used mainly in forward areas in support of amphibious landing operations. They will be capable of controlling and providing limited support for minesweeping ships and boats, and helicopters.

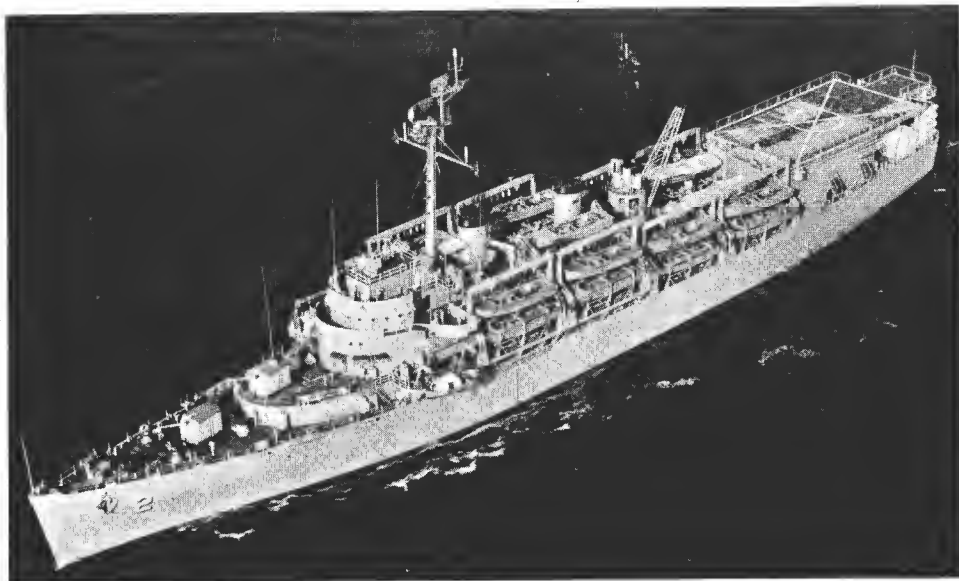
DISPOSALS
Of the three vessels of the original netlayer type converted into vehicle landing ships, *Saugus*, MCS 4 (ex-LSV 4, ex-AN 4) was stricken from the Navy List on 1 July 1961, and *Monitor*, MCS 5 (ex-LSV 5, ex-AN 5) and *Osage*, MCS 3 (ex-LSV 3, ex-AN 3), were stricken on 1 Sep 1961. The netlayer *Galilea* (ex-*Montauk*), AKN 6 (ex-LSV 6, ex-AN 2, ex-AP 161) was stricken from the Navy List on 1 Sep 1960.

1 LSD Type

EPHING FOREST MCS 7

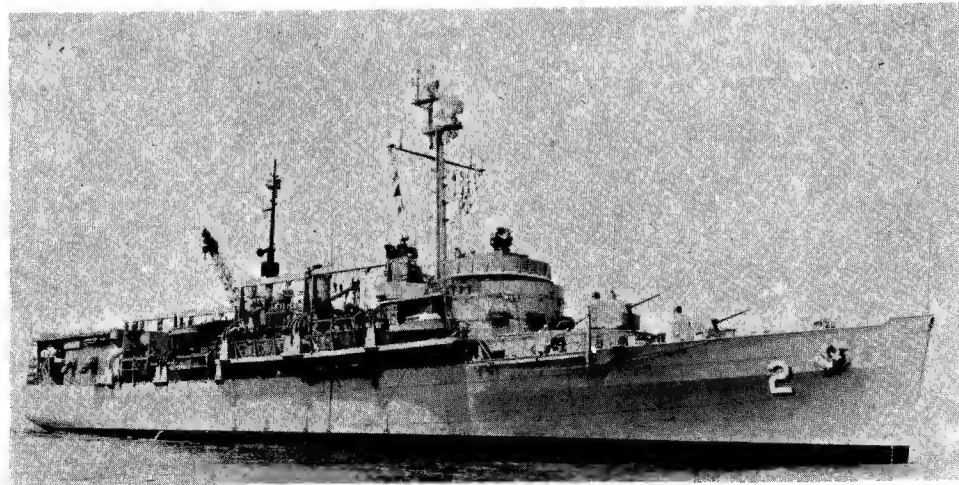
RECLASSIFICATION. The dock landing ship *Epping Forest*, ex-LSD 4, employed as a mine escort tender in the Far East, see particulars on a later page, was reclassified as MCS 7 on 30 Nov 1962.

TANK LANDING SHIP TYPE. The mine countermeasures support ship *Orleans Parish*, former tank landing ship LST 1069, see particulars on a later page, was reclassified as MCS 6 on 19 Jan 1959, but was redesignated as T-LST 1069 on 1 June 1966.



OZARK

1967, Official



OZARK

1967

OCEAN MINESWEEPERS (MSO)

9 New Construction

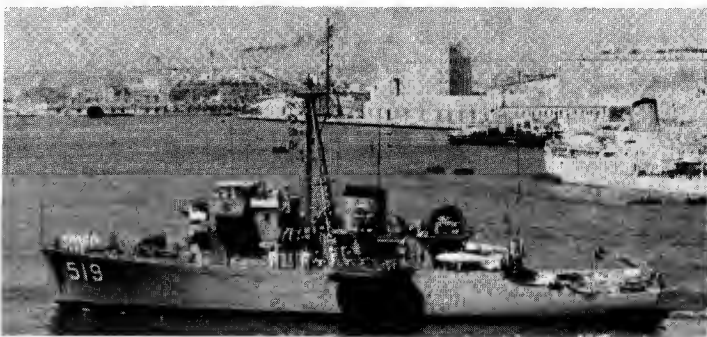
MSO 523	MSO 525	MSO 527	MSO 529
MSO 524	MSO 526	MSO 528	MSO 530
			MSO 531
Displacement, tons	940		

Ocean minesweepers of a new type, but will resemble "Ability" Class. Requested in the Fiscal Year 1966 New Construction Programme, but withdrawn from bidding for redesigning. To be in the Multi-Year Programme of sixteen Ocean Minesweepers, five of which are in the Fiscal Year 1967 Programme. Planned to combine the capabilities of MSOs (ocean minesweepers) and MHCs (coastal minehunters).

3 "Ability" Class

ABILITY MSO 519	<i>Launched</i> 29 Dec 1956	ALACRITY MSO 520	<i>Launched</i> 8 June 1957
		ASSURANCE MSO 521	31 Aug 1957
Displacement, tons	810 light; 963 full load		
Dimensions, feet	191 oa x 36 x 11		
Guns	1—40 mm AA; 2—50 cal MG		
Main engines	2 GM diesels; 2 shafts; controllable pitch propellers; 2 700 bhp = 15 knots		
Complement	71 (6 officers, 65 men)		

Non-magnetic, wooden hulled vessels built by Petersen Builders Inc, Sturgeon Bay, Wisc. Last of the Fiscal Year 1955 New Construction Programme to be awarded. Designed to serve as mine division Commander's flagships. Equipped for all types of mine countermeasures operations. Laid down on 5 Mar 1956, 3 May 1956 and 28 Jan 1957 respectively. Launch dates above. *Ability* commissioned on 14 Aug 1958. *Assurance* commissioned on 21 Nov 1968. PHOTOGRAPHS. A photograph of *Alacrity* appears in the 1964 65-editions, and of *Assurance* in the 1965-66 and 1966-67 editions.



ABILITY

1966, A. & J. Pavia

4 "Acme" Class

ACME MSO 508	<i>Launched</i> 23 June 1955	ADVANCE MSO 510	<i>Launched</i> 12 July 1957
ADROIT MSO 509	20 Aug 1955	AFFRAY MSO 511	18 Dec 1956
Displacement, tons	720 light; 780 full load		
Dimensions, feet	173 oa x 35 x 10		
Guns	1—40 mm AA; 2—50 cal MG		
Main engines	2 Packard diesels; 2 shafts; 2 800 bhp = 14 knots		
Oil fuel, tons	50		
Radius, miles	3 000 at 10 knots		
Complement	74		

This class is different from the "Agile" type but have similar basic particulars. *Affray* commissioned on 8 Dec 1958. Fitted with flagship facilities.

TRANSFERS. MSO Nos. 506 and 507 launched on 13 Nov 1954 and 19 Feb 1955, respectively, were transferred to Italy in 1956. MSO 522, built by Petersen Builders Inc, under the FY 1958 Programme, similar to MSO 512 class, was transferred to Belgium in Dec 1960.



AFFRAY

1966, A. & J. Pavia

1 Special Minesweeper (MSS)

MSS 1 (ex-SS Harty L. Gluckman)

Displacement, tons	15 000 full load
Dimensions, feet	442 x 57 x 28 max
Guns	2—50 cal MG
Main engines	5 outboard deck mounted diesel driven engines; 2 500 hp = 10 knots
Complement	9 (1 officer, 8 men)

For sweeping pressure, acoustic and magnetic mines. Being converted under the Fiscal Year 1966 Conversion Programme by American Shipbuilding Co. Liberty ship hull, EC2-S-C1 Type, with "over-the-side" propulsion. Former machinery, shafting, propeller and topside structure removed. Hull strengthened. Fitted with high-shock auxiliary equipment. To cost \$4 718 605.

Ocean Minesweepers—continued

57 "Agile" Class

AGILE (19 Nov 1955)	MSO 421	IMPERVIOUS (29 Aug 1952)	MSO 449
AGGRESSIVE (4 Oct 1952)	422	IMPLICIT (1 Aug 1953)	455
AVENGE (15 Mar 1953)	423	INFLECT (6 Oct 1953)	456
BOLD (14 Mar 1953)	424	LOYALTY (22 Nov 1953)	457
BULWARK (14 Mar 1953)	425	LUCID (14 Nov 1953)	458
CONFLICT (16 Dec 1952)	426	NIMBLE (6 Aug 1954)	459
CONSTANT (14 Feb 1952)	427	NOTABLE (15 Oct 1954)	460
DASH (20 Sep 1952)	428	OBSERVER (19 Oct 1954)	461
DETECTOR (5 Dec 1952)	429	PINNACLE (3 Jan 1955)	462
DIRECT (27 May 1953)	430	PIVOT (9 Jan 1954)	463
DOMINANT (5 Nov 1953)	431	PLUCK (6 Feb 1954)	464
DYNAMIC (17 Dec 1952)	432	PRIME (27 May 1954)	466
ENGAGE (ex- <i>Elusive</i> , 18 June 1953)	433	REAPER (25 June 1954)	467
EMBATTLE (27 Aug 1953)	434	RIVAL (15 Aug 1953)	468
ENDURANCE (9 Aug 1952)	435	SAGACITY (20 Feb 1954)	469
ENERGY (13 Feb 1953)	436	SALUTE (14 Aug 1954)	470
ENHANCE (11 Oct 1952)	437	SKILL (23 Apr 1955)	471
ESTEEM (20 Dec 1952)	438	VALOR (13 May 1953)	472
EXCEL (25 Sep 1953)	439	VIGOR (24 June 1953)	473
EXPLOIT (10 Apr 1953)	440	VITAL (12 Aug 1953)	474
EXULTANT (6 June 1953)	441	CONQUEST (20 May 1954)	488
FEARLESS (17 July 1953)	442	GALLANT (4 June 1954)	489
FIDELITY (21 Aug 1953)	443	LEADER (15 Sep 1954)	490
FIRM (15 Apr 1953)	444	PERSISTANT (23 Apr 1955)	491
FORCE (26 June 1953)	445	PLEDGE (20 July 1955)	492
FORTIFY (14 Feb 1953)	446	STALWART (3 Dec 1955)	493
GUIDE (17 Apr 1954)	446	STURDY (28 Jan 1956)	494
ILLUSIVE (12 July 1952)	448	SWERVE (1 Nov 1955)	495
		VENTURE (27 Nov 1956)	496

Displacement, tons	665 light; 750 full load
Dimensions, feet	165 wl; 171 oa x 35 x 11
Guns	1—40 mm AA; 2—50 cal MG
Main engines	2 Packard diesels; 2 shafts; controllable pitch propellers; 2 280 bhp = 15.5 knots; <i>Dash</i> , <i>Detector</i> , <i>Direct</i> and <i>Dominant</i> have 2 GM diesels, 1 520 bhp; <i>Venture</i> has 2 diesels, 1 200 bhp
Oil fuel, tons	46
Radius, miles	2 400 at 12 Knots
Complement	72 to 75

These ships have wooden hulls and non-magnetic equipment, with diesels of non-magnetic stainless steel alloy. *Aggressive*, AM 422, was built by Luders Marine Const Co, Stamford, Conn. Cost \$3 500 000. Laid down on 25 May 1951, commissioned on 25 Nov 1953. *Illusive*, AM 448, was built by Martinlock SB Co, San Diego, and commissioned on 14 Nov 1953. *Bold*, AM 424, and *Bulwark* AM 425, were built by Norfolk Naval Shipyard, and the remainder by private yards. All the above vessels, formerly known as Minesweepers (AM) were reclassified as Minesweepers, Ocean (Non-Magnetic) (MSO) in Feb 1955. Launch dates above. A total of 100 were built in the USA for the US Navy and the Mutual Defence Assistance Programme.

PHOTOGRAPHS. Of *Direct* in the 1955-56 edition, *Exultant* in the 1956-57 and 1958-59 editions, *Vital* in the 1957-58 and 1960-61 to 1966-67 editions, *Pinnacle* in the 1957-58 to 1966-67 editions, *Nimble* in the 1958-59 and 1959-60 editions.

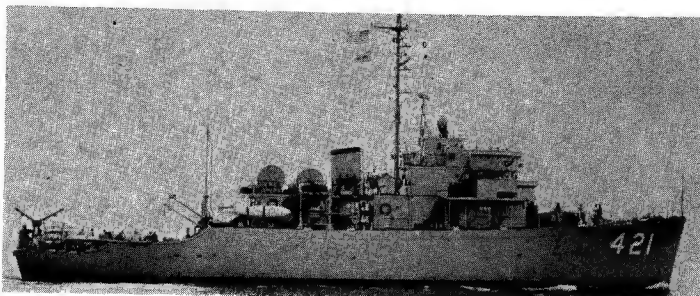
TRANSFERS. Nos. 450-454, 475-487, 498-507, 152-518 were built for foreign countries under the Military Air Programme and no US names were allocated. 8 were transferred to France, 6 to the Netherlands, 4 to Portugal, 4 to Belgium, 2 to Norway, and 2 to Italy.

CASUALTIES. *Prestige* MSO 465, was stranded in the Naruto Straits, Inland Sea, Japan, on 23 Aug 1958, abandoned as a total loss and stricken from the Navy List. *Exultant* caught fire after an explosion off the coast of Savannah, Georgia, on 12 Aug 1960, but has been repaired. *Stalwart* MSO 493, capsized and sank as a result of fire at San Juan, Puerto Rico, in July 1966, but was salvaged and rebuilt.



OBSERVER

1967, United States Navy, Official



AGILE

1967, United States Navy, Official

FLEET MINESWEEPERS (MSF)
28 "Auk" Class. (Large Type)

4 American SB Co	MSF	4 Gulf SB Corpn	MSF
SPRIG (15 Sep 1944)	384	ROSELLE (29 Aug 1945)	379
STEADY (8 June 1942)	118	SCOTER (26 Sep 1945)	381
TERCEL (16 Dec 1944)	386	TUMULT (19 Apr 1942)	127
WHEATEAR (21 Apr 1945)	390	VELOCITY (19 Apr 1942)	128
1 Associated Shipbuilders		2 John H. Mathis Co	
SPEAR (25 Feb 1943)	322	SWAY (29 Sep 1942)	120
		SWIFT (5 Dec 1942)	122
1 Defoe B & M Works		2 Pennsylvania Shipyard	
BROADBILL (21 May 1942)	58	PILOT (5 July 1942)	104
		PIONEER (26 July 1942)	105
10 General Engineering & DD Co		3 Savannah Machine & Foundry Co	
ARDENT (22 June 1943)	340	PEREGRINE (ex-MSF 373) AG 176	
CHAMPION (12 Dec 1942)	314	(17 Feb 1945)	
CHIEF (5 Jan 1943)	315		
COMPETENT (9 Jan 1943)	316		
DEFENSE (18 Feb 1943)	317		
DEVASTATOR (19 Apr 1943)	318	SYMBOL (2 July 1942)	123
GLADIATOR (7 May 1943)	319	THREAT (15 Aug 1942)	124
HERALD (4 July 1942)	101		
IMPECCABLE (21 May 1943)	320	1 Winslow Marine Ry & SB Co	
STARLING (11 Apr 1942)	64	SAGE (21 Nov 1942)	111

Displacement, tons 890 standard; 1 250 full load
Dimensions, feet 215 wl, 221 2 oa x 32.2 x 10.8
Guns 1—3 in, 50 cal dp; 2 or 4—40 mm AA
Main engines Diesel electric; 2 shafts; 3 118-3532 bhp = 18 knots
Complement Accommodation for 105 to 117

Steel hulled. Launch dates above. All except *Peregrine* AG 176, ex-EMSF 373, (experimental) are in the Atlantic and Pacific Reserve Fleets.

RECLASSIFICATION. All the above, formerly known as Ocean Minesweepers (AM) were reclassified as Minesweepers, Fleet (steel-hulled) MSF in Feb 1955. *Prevail* (AM 107), *Pursuit* (AM 108), *Requisite* (AM 109) and *Sheldrake* (AM 62) were reclassified as survey ships (AGS) in 1952 and *Towhee* (MSF 388) in Apr 1964. *Surfbird* (MSF 383) was reclassified as a degaussing vessel (ADG) on 18 May 1957. *Tanager*, MSF 385, was transferred to the Coast Guard on 1 Nov 1963. Designation of *Peregrine*, EMSF 373, was changed to AG 176 on 1 Apr 1964.

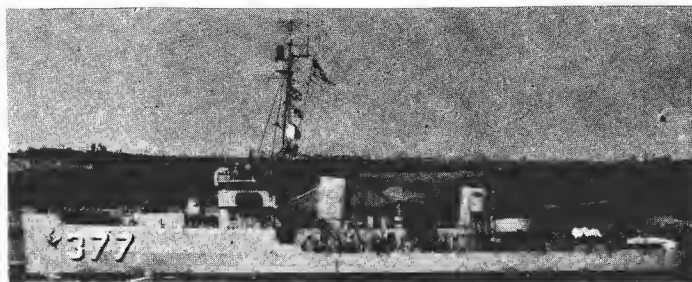
PHOTOGRAPHS. Larger photographs of *Sprig* in the 1957-58 and earlier editions, of *Pilot* in the 1959-60 edition.

TRANSFERS. *Strive*, MSF 17, *Sustain* MSF 119, *Seer* MSF 112, and *Triumph* MSF 323, converted and reclassified as coastal minelayers MMC 1, MMC 2, MMC 5, and MMC 3, respectively, transferred to Norway in 1959-60, *Ruddy* MSF 380 and *Shoveler* MSF 382 to Peru in 1960, *Ptarmigan* MSF 376 to Korea on 25 July 1963, *Murrelet* MSF 372 to Philippines in June 1965, *Redstart* MSF 378, *Toucan* MSF 387 to Taiwan on 22 Dec 1964 and *Waxwing* MSF 389, in Aug 1965, *Chickadee* MSF 59 to Uruguay in Aug 1966, *Dextrous*, MSF 341 and *Speed* MSF 116 to Korea in 1967, *Vigilance* MSF 324 to Philippines in 1967.

DISPOSALS
Auk MSF 57 was stricken from the list of naval vessels on 1 Aug 1959, and *Raven* MSF 55, *Nuthatch* MSF 60, *Heed* MSF 100, *Pheasant* MSF 51, *Motive*, MSF 102 (expended as target off San Diego in Jan), *Oracle* MSF 103, *Revenge* MSF 110, *Staff* MSF 114, *Token* MSF 126, *Zeal* MSF 131, *Pigeon* MSF 374, *Pochard* MSF 375 and *Quail* MSF 377 in 1967.



WAXWING Ted Stone



OUAIL Added 1960, Ted Stone

Fleet Minesweepers—continued
"Auk" Class—contd.



PEREGRINE 1966 (direct from Commanding Officer, USS *Peregrine*)

11 "Admirable" Class. (Medium Type)

6 Associated Shipbuilders	MSF	1 Tampa SB Co	MSF
SCURRY (ex-Skurry, 11 Oct 1943)	304	CRUISE (21 Mar 1943)	215
SPECTRE (15 Feb 1944)	306		
STAUNCH (15 Feb 1944)	307	2 Willamette Iron & Steel Corpn	
STRATEGY (28 Mar 1944)	308	COUNSEL (17 Feb 1943)	165
STRENGTH (28 Mar 1944)	309	GRAYLAG (4 Dec 1943)	364
SUPERIOR (11 May 1944)	311		
1 Gulf SB Corpn		1 Winslow Marine Rly & SB Co	
PROWESS ex-MSF 280 (17 Feb 1944) IX 305		HAZARD (21 May 1944)	240

Steel Hulled. Launch dates above. Appearance varies according to the builders. Some have a funnel. *Cruise*, completed by Charleston Navy Yard, was armed with only 2—40 mm guns. All in the Atlantic Reserve Fleet except *Counsel*, Pacific Reserve Fleet, and *Prowess*, employed as a naval reserve training ship and redesignated IX 305 on 18 Feb 1966

PHOTOGRAPHS. A photograph of the no funnel type appears in the 1957-58 to 1965-66 editions.

RECLASSIFICATION. All the above minesweepers, formerly known as Fleet Minesweepers (AM) were reclassified as Minesweepers, Fleet (steel hulled) MFS in Feb 1955.

TRANSFERS. 34 of this class were transferred to the Soviet Navy in 1943, and 13 to the Chinese Navy. *Gayety*, MSF 329 and *Sentry* MSF 299 were transferred to the Vietnamese Navy in June 1962 and Aug 1962, respectively, and *Serene*, MSF 300 and *Shelter* MSF 301, in Jan 1964, *Crag* MSF 214, *Device* MSF 220, *Diploma* MSF 221, *Dour* MSF 223, *Eager* MSF 224, *Execute* MSF 232, *Facility* MSF 233, *Hilarity* MSF 241, *Instill* MSF 252, *Intrigue* MSF 253, *Invade* MSF 254, *Jubilant* MSF 255, *Knave* MSF 256, *Ransom* MSF 283, *Rebel* MSF 284, *Recruit* MSF 285, *Scout* MAF 296, *Scuffle* MSF 298, *Success* MSF 310 and *Harlequin* MSF 365, to Mexico in Oct 1962. *Report* MSF 289 was transferred to the army in Apr 1963. *Craddock* MSF 356, to Burma on 31 Mar 1967, *Signet* MSF 302 and *Skirmish* MSF 303 to the Dominican Republic in 13 Jan 1965.

LOSSES. *Salute* AM 294, was lost in the Second World War. *Pirate* (AM 275) and *Pledge* (AM 277) of this class struck mines and sank off Wonsan, Korean east coast, on 12 Oct 1950.

DISPOSALS
Control MSF 164, was stricken from the Navy List on 13 Mar 1948 and disposed of in 1959, *Clamour* MSF 160, *Climax* MSF 161, *Compel* MSF 162, *Concise* MSF 163, *Incredible* MSF 249, *Mainstay* MSF 261, *Reign* MSF 288, *Dipper* MSF 357 and *Harrier* MSF 366, on 1 Dec 1959, *Change* MSF 159, *Density* MSF 218, *Design* MSF 219, *Garland* MSF 238, *Opponent* MSF 269 and *Scrimmage* MSF 297, at the end of 1960, *Inaugural* MSF 242 in 1961, *Gadwall* MSF 362 on 1 Nov 1966.



FUNNEL TYPE United States Navy, Official

COASTAL MINESWEEPERS (MSC)

22 "Bluebird" Class

BLUEBIRD	MSC 121	LIMPKIN	MSC 195	THRUSH	T 204
CORMORANT	T 122	MEADOW LARK	196	VIREO	205
FALCON	T 190	PARROT	197	WARBLER	206
FRIGATE BIRD	191	PEACOCK	198	WHIPPOORWILL	207
HUMMING BIRD	192	PHOEBE	199	WIDGEON	208
JACANA	193	SHRIKE	E 201	WOODPECKER	209
KING BIRD	194	THRASHER	T 203	ALBATROSS	289
				GANNET	290

E Shrike is experimental. T. Assigned to Naval Reserve training.

Displacement, tons	320 light; 370 full load
Dimensions, feet	138 pp; 144 oa x 28 x 8.2
Guns	2—20 mm (1 twin mounting)
Main engines	2 GM diesels; 2 shafts; 880 bhp = 13 knots (MSC 200-209). Packard engines; 2 shafts; 1 200 bhp = 14 knots. (MSC 121, 122, 190-199) 4 Harnischfeger 6-cyl diesels (Albatross, Gannet)
Oil fuel, tons	25
Radius, miles	2 500 at 10 knots
Complement	39

Constructed throughout of wood and other materials with the lowest possible magnetic attraction to attain the greatest possible safety factor when sweeping for magnetic mines. Bluebird and Cormorant (commissioned 14 Aug 1953) built by Mare Island Naval Shipyard, 310 tons light. Only named vessels AMS 121, 122, 190 209 were commissioned into the US Navy. Remainder, 60-120, 123-154, 167-171, 218-221, 255-288 were built for NATO or foreign countries under MDAP.

TRANSFERS. 18 to Italy: AMS 72-76, 79-82, 88-90, 113-137, 280. 18 to Belgium: AMS 63-65, 77, 78, 101, 103, 104, 131, 151-154, 169-171, 259, 260. 8 to Denmark: AMS 127, 128, 129, MSC 221, 256, 257, 263, 264. 30 to France: AMS 66-71, 83-87, 93, 94, 96-99, 113-120, 124-126, 141-142. 14 to Netherlands: AMS 100, 105-112, 148 150, 167, 168. 2 to Norway: AMS 102, 132. 8 to Portugal: AMS 60 (ex-USS Adjutant), 61, 62, 91, 92, 145-147. 12 to Spain: AMS 130, 139, 143, 220, 265, 266, MSC 200 (ex-USS Redwing), MSC 202 (ex-USS Spoonbill), MSC 269, 279, 287, 288. 4 to Japan: AMS 95, 144, 255, 258. 8 to Pakistan: AMS 138, 261, 262, 267, 273, 274, 293, 294. 9 to Turkey: 268, 270, 271, 272, 304, 305, 311, 312, 315. 4 to Iran: MSC 275, 276, 291, 292. 8 to Taiwan, China: AMS 123, 140, MSC 277, 278, 300, 302, 306, 307. 3 to Vietnam: MSC 281, 282, 283. 6 to Korea: MSC 284, 285, 286; 295, 296, 316. 2 to Philippines: MSC 218, 219. 8 to Greece: MSC 298, 299, 308, 309, 310, 314, 317, 318. 4 to Thailand: MSC 297, 301, 303, 313.

CANCELLATION. AMS 155 to 166 were reserved for German built vessels, but the order and numbers were cancelled.

RECLASSIFICATION. All the early vessels formerly known as Auxiliary Motor Minesweepers (AMS) were reclassified as Minesweepers, Coastal (MSC), in Feb 1955.

PRODUCTION. More than 240 AMS/MSC were built in the USA for the US Navy and MDAP.

CONSTRUCTION. Bellingham Shipyards Company, Washington, built MSC 268-272 and MSC 273-288 for foreign countries under the Military Assistance Programme. Two were built by Tacoma Boatbuilding Co, Tacoma, Washington:—Albatross, laid down on 26 Feb 1959, launched on 26 Mar 1960, and completed on 24 Apr 1961, and Gannet, laid down on 1 May 1959, launched on 2 June 1960, and completed on 14 July 1961. MSC 291 was launched on 3 Mar 1961 at Tacoma for MDAP. Two were built by Petersen Builders Inc, Sturgeon Bay, Wisc, with 4 diesels driving two fixed-pitch propellers, and gas turbine generators for power minesweeping (MSC 292 and 293, for MAP) and MSC 294, 295, 296 and 297 for MAP, 145 x 27 feet, 362 tons full load. Tacoma Boatbuilding Co built MSC 298-301, Stowman Shipbuilding Corp, NJ, built MSC 302-306; Petersen Builders built MSC 307-315. MSC 315 was launched on 12 Jan 1966. 145.5 x 27.2 feet, 2 shafts, 4 diesels = 1 000 hp.

PHOTOGRAPHS. A port broadside view of Bluebird appears in the 1955-56 and 1956-57 editions, a port quarter oblique aerial view of Jacana in the 1957-58 edition, a port bow oblique aerial view of Cormorant in the 1958-59 to 1961-62 editions, and a port bow surface view of Albatross in the 1962-63 to 1966-67 editions.



PARROT 1967, United States Navy, Official

COASTAL MINESWEEPERS

8 "Albatross" Class

FULMAR	(ex-YMS 193) MSCo 47	REEDBIRD	(ex-YMS 291) MSCo 51
LINNET	(ex-YMS 395) MSCo 24	RUFF	(ex-YMS 327) MSCo 54
LORIKEET	(ex-YMS 271) MSCo 49	SISKIN	(ex-YMS 425) MSCo 58
PLOVER	(ex-YMS 442) MSCo 33	TURKEY	(ex-YMS 444) MSCo 56
Displacement, tons	270 standard; 250 full load		
Dimensions, feet	136 x 24.5 x 8		
Guns	1—40 mm AA		
Main engines	2 GM diesels; 2 shafts; 1 000 bhp = 15 knots		
Oil fuel, tons	16		
Radius, miles	5 500 at economical speed		
Complement	34 (4 reserve officers, 9 regular men, 21 reserve men)		

Of wooden construction. All launched in 1942-43. Formerly known as Auxiliary Motor Minesweepers (AMS). Reclassified as Minesweepers, Coastal (old), MSCo, in Feb 1955. Magpie (AMS 25) and Partridge (AMS 31) of this class struck floating mines and sank off the Korean east coast on 1 Oct 1950 and 2 Feb 1951, respectively. Bobolink, Bunting, Gull, Merganser, Redhead, Sanderling and Waxbill were converted into coastal minehunters in 1945-55. Of the eleven surviving ships of this formerly very numerous class assigned to the mine warfare selected programme in 1960 with reserve crews, eight remain. Only one funnelled ships in this class now, the two-funnelled ships and the no-funnel ships having been stricken.

TRANSFERS. Chatterer, Condor, Firecrest, Heron, Osprey, Pelican and Swallow to Japan in 1955. Many of this type are in other navies. Curlew, Kite and Mockingbird to Korea on 6 Jan 1956, Hummer MSCo 20, and Lark MSCo 23, to Japan in 1959, Cardinal MSCo 4, and Egret MSCo 46 to Brazil on 15 Aug 1960, Jackdaw MSCo 21, and Grackle MSCo 13, in 1963.

DISPOSALS. Albatross MSCo 1 and Hawk MSCo 17 were stricken from the Navy List in 1958. Redpoll MSCo 57, on 1 July 1959, Cardinal MSCo 4, Courser MSCo 6, Crow MSCo 7, Flamingo MSCo 11, Goldfinch MSCo 12, Grosbeak MSCo 14, Hornbill MSCo 19, Ostrich MSCo 29, Swan MSCo 37, Verdin MSCo 38, Barbet MSCo 41, Brambling MSCo 42, Brant MSCo 43, Courlan MSCo 44, Crossbill MSCo 45, Egret MSCo 46, Lapwing MSCo 48, Nightingale MSCo 50, Rheda MSCo 52, and Seagull MSCo 55, on 1 Nov 1959. Flicker MSCo 9, and Jackdaw MSCo 21 on 1 Jan 1960, Robin MSCo 53 in Aug 1961. Grouse MSCo 15, was destroyed after grounding on 21 Sep 1963.



SEAGULL 1960, United States Navy, Official

INSHORE MINESWEEPERS

2 "Cove" Class

COVE MSI 1	CAPE MSI 2
Displacement, tons	120 light; 249 full load
Dimensions, feet	111.8 x 23 x 5.5 (10 max)
Main engines	2 GM diesels; 1 shaft; 650 bhp = 12 knots
Complement	21 (3 officers, 18 men)

Provided under the 1956 Naval Appropriations. Prototypes for inshore minesweeping. Cost \$750 000 plus \$350 000 for equipment. Both built at Bethlehem Shipyards Co Bellingham, Washington. Laid down on 1 Feb 1957 and 1 May 1957, respectively, launched on 8 Feb 1958 and 5 Apr 1958 and placed in service on 20 Nov 1958 and 27 Feb 1959, respectively.

MAP TRANSFER PROGRAMME. MSI 3 to MSI 10 were built under off-shore procurement. MSI 13 and MSI 14 were transferred to Iran in 1964. MSI 15 to 19 were built in 1965-67 for transfer.

PHOTOGRAPHS. A port quarter oblique aerial view of Cape appears in the 1960-61 to 1966-67 editions.



COVE 1967, United States Navy, Official

ESCORTS (PCE and PCER)

9 "180" ft. Steel Type

	PCE	Launched		PCER	Launched
WHITEHALL	856	21 Apr 1944	FAIRVIEW	E 850	8 Feb 1944
HAVRE	877	11 Aug 1943	ROCKVILLE	E 850	22 Feb 1944
ELY	880	27 Oct 1943	AMHERST	853	18 Mar 1944
PORTAGE	902	28 Aug 1943	REXBURG	E 855	10 Apr 1944
			MARYSVILLE	E 857	4 May 1944
Displacement, tons	640 standard; 903 full load				
Dimensions, feet	180 wl; 184.5 oa x 33 x 9.5				
Guns	1—3 in dp; 6—40 mm AA; 4 DCT (most PCER type are unarmed)				
Main engines	Diesel; 2 shafts; 1 800 to 2 400 bhp = 15 knots				
Complement	60 (5 officers, 55 men)				

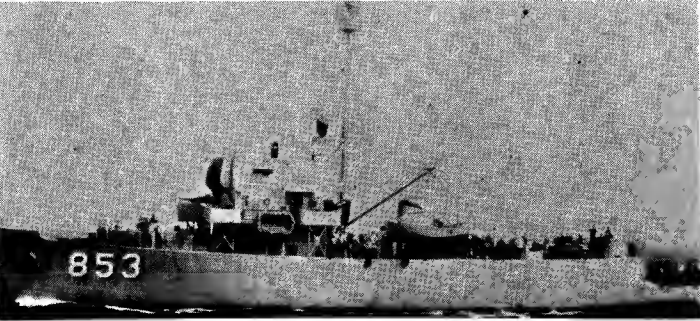
Built by Pulman Standard Mfg Co, Albina Engine & Machinery Works and Willamette Iron and Steel Corpn. During the Second World War the "PCER" type carried hospital equipment and personnel, with accommodation for 57 patients, PCE 873-898 were redesignated PCEC, reassigned to amphibious forces, and had additional equipment installed as Control Escorts, but the remaining PCEC were again reclassified as PCE on 27 Oct 1955. The surviving PCE and PCER were named on 15 Feb 1956. *Whitehall* was reclassified from PCER to PCE in Mar 1962. The four remaining PCEs and *Amherst* are Reserve training ships.

EXPERIMENTAL. The experimental vessels, Nos. 850, 851, 852, 855, and 857 were redesignated EPCER in 1959. *Marysville* was fitted with a 800 ft thermistor chain in 1966.

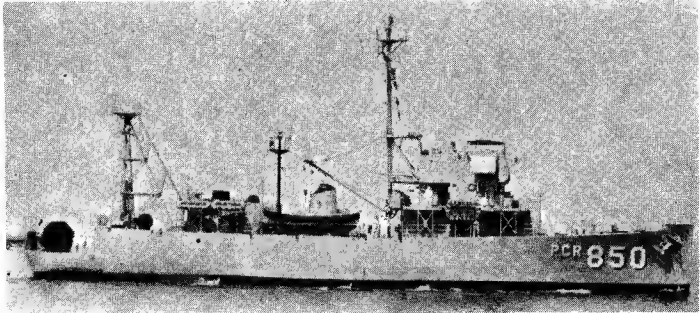
PHOTOGRAPHS. A photograph of *Battleboro*, PCER 852, appears in the 1949-50 to 1958-59 editions, of *Gettysburg*, PCE 904, in the 1952-53 to 1959-60 editions, of *Rexburg*, EPCER 855 in the 1959-60 to 1961-62 editions.

TRANSFERS. *Eunice*, PCE 846, and *Pascagoula*, PCE 874, to Ecuador in 1960, several PCE to China, Cuba and Mexico, PCEC 873, PCEC 882, PCEC 896 and PCEC 898 to Korea, PCEC 873 and PCEC 898 to Korea in 1956 and PCEC 882 and PCEC 396 in Feb 1955, *Crestview* PCE 895 to Vietnam on 29 Nov 1961, *Batesburg* PCE 903, *Diana* PCE 870, *Marfa* PCE 842, and *Somerset* PCE 892, to Korea on 9 Dec 1961, *Lamar*, PCE 899 to the Coast Guard on 1 June 1964, *Worland* PCE 845 to the State of North Carolina on 6 June 1964, *Farlington* PCE 894 to Burma on 31 May 1965, *Battleboro* to Vietnam in 1966.

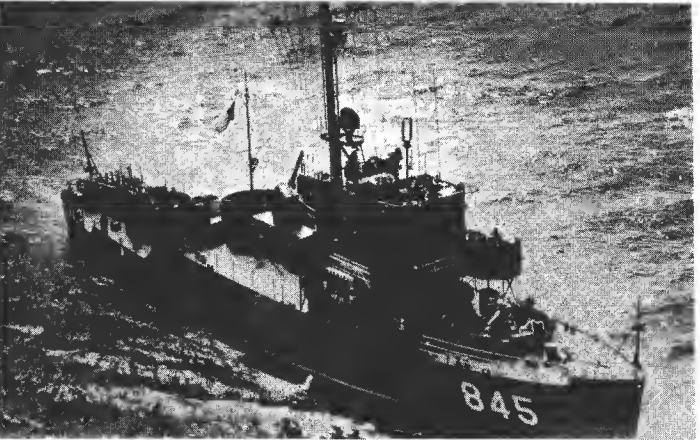
DISPOSALS. *Skowhegan* PCE 843, *Groton* PCE 900 and *Gettysburg* PCE 904, were stricken on 1 Feb 1960, *Banning* PCE 886, on 1 May 1961 (subsequently transferred to Hood River, Oregon, as a memorial), *Somersworth*, EPCER 849, on 1 Apr 1966.



AMHERST 1966, United States Navy, Official



FAIRVIEW (PCER type) 1962, Mr S. P. Ryan



WORLAND (PCE Type) 1960, United States Navy, Official

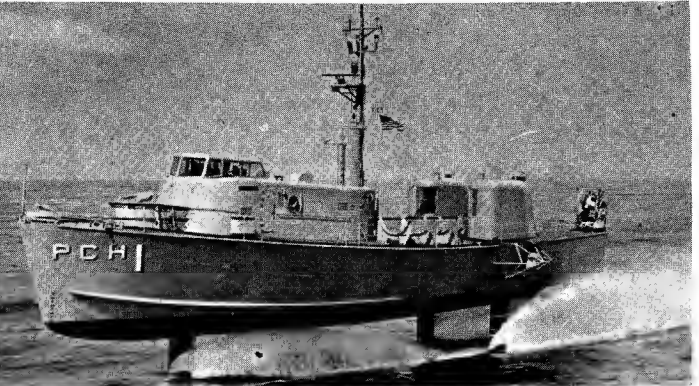
SUBMARINE CHASER HYDROFOIL (PCH)

HIGH POINT PCH 1

Displacement, tons	110
Dimensions, feet	115 oa x 31; draught 6 to 17
Guns	2—50 cal MG (twin)
A/S weapons	4—21 in torpedo tubes (2 twin); DCT
Main engines	2 Bristol Siddeley Marine Proteus gas turbines; 2 shafts; 6 200 shp = 48 knots max
Complement	Auxiliary diesel propulsion; 600 bhp = 12 knots cruising 13 (1 officer, 12 men)

Hydrofoil submarine chaser, prototype of future anti-submarine warfare patrol craft, for harbour surveillance, harbour approaches, and coastal water out to 200 miles. The largest operational naval hydrofoil in the world. Equipped with machine guns, torpedoes, depth charges and sonar gear. Aluminium hull. Four propellers, two pushing, two pulling, fitted on retractable hydrofoils. Forward foil single strut, after foil two struts. Struts extend over 14 ft below hull. With foils retracted draught is about 6 ft. Diesel with retractable propeller. Two sonars and magnetic detection equipment installed. Provided for under the Fiscal Year 1960 Programme. Cost \$3 700 000. Named after High Point. North Carolina.

CONSTRUCTION. Designed by W. C. Nickum & Sons, Seattle, Wn. Built jointly by Boeing Aircraft Corpn, Seattle, Wn, and J. M. Martinac, Tacoma, Washington, at Martinac's Tacoma Yard. Laid down on 27 Feb 1961. Launched on 17 Aug 1962. Completed and placed in service on 3 Sep 1963



HIGH POINT 1967, United States Navy, Official

DENISON (HYDROFOIL SHIP)

Displacement, tons	90 max
Length, feet	104.5 (117 with tail foil down)
Beam, feet	23 (hull), 45 with foils down
Draft, feet	6.2 with foils up, 15.4 with foils down
Main engines	Gas turbines, 875 hp hull borne, 14 500 hp foil borne = 62 kts
Complement	8

Hydrofoil craft built as a test vehicle for \$5 000 000 by Grumman Aircraft Engineering Corp, Bethpage, Long Island NY for Maritime Administration in 1962. Engineed by General Electric Corpn. All aluminium hull, lightweight machinery. Transferred to the US Navy at Oyster Bay, LI NY on 27 Aug 1965 and assigned to Pacific Missile Range, Pt Mugu, Calif. Used to transport personnel and supplies to offshore islands and in the sea test range in area clearance and rescue work. Keel leaves water at 27 knots. 400 miles cruising range.



DENISON 1967, United States Navy, Official

PATROL GUNBOATS HYDROFOIL (PGH) 2 New Construction

FLAGSTAFF PGH 1

Displacement, tons	57
Dimensions, feet	75 x 22
Guns	1—40 mm fwd, 1—81 mm mortar aft; 4—50 cal MG (2 twin)
Main engines	3 000 hp; 1 shaft; geared propeller, speed 48 knots max
Complement	13 (1 officer, 12 men)

Built by Grumman Aircraft Corp, Stuart, Florida. Laid down on 15 July 1966 for launching in Nov 1967 and delivery in Jan 1968. Cost \$3 600 000.

TUCUMCARI (PGH 2)

Displacement, tons	60
Dimensions, feet	71 x 25
Guns	1—40 mm; 1—81 mm mortar; 2 twin 50 cal MG
Main engines	3 000 hp gas turbine for foil borne = 40 plus knots; water-jet propulsion; 150 hp diesel for hull borne
Complement	13 (1 officer, 12 men)

Built by Boeing Aircraft, Seattle, hull by Gunderson Bros, Portland. Aluminium hull. Three foils. Laid down on 1 Sep 1966 and launched on 30 June 1967 for delivery in Feb 1968. Cost \$4 000 000.

SUBMARINE CHASERS (PCS)

2 "136" ft. Wooden Type

HOLLIDAYSBURG PCS 1385	BEAUFORT PCS 1387
Displacement, tons	251 standard, 338 full load
Dimensions, feet	136 x 24.5 x 8.5
Guns	1—3 in dp; 1—40 mm AA, 2—20 mm AA
A/S weapons	DCT
Main engines	2 GM diesels, 1 000 bhp = 14 knots
Complément	60

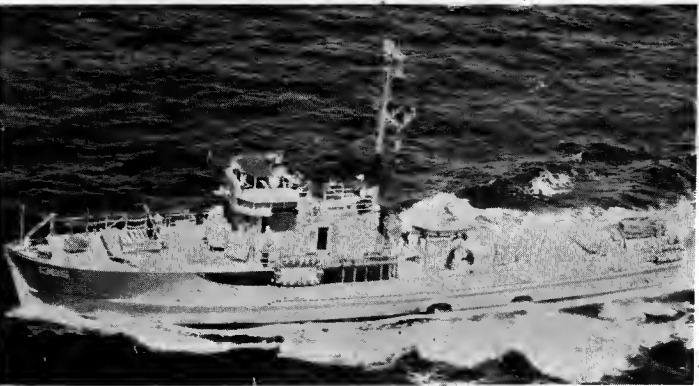
These survivors of a class of 52 units were completed in 1944. All PCS were named on 15 Feb 1956. Employed as naval reserve training ships.

CLASS. Five vessels of this class were reclassified as minesweepers with names and designations, *Sanderling* AMS 35, *Swallow* AMS 36, *Swan* AMS 37, *Verdin* AMS 38, *Waxbill* AMS 39, but in March and Feb 1955 *Sanderling* AMS 35 and *Waxbill* AMS 39 were reclassified as minesweepers AMCU 49 and AMCU 50, respectively, and again redesignated when minehunters were reclassified MHC. *Swallow*, *Swab* and *Verdin* were redesignated MSC(O) on 7 Feb 1955. Former PCS 1465 was named *Minah* MHC (ex-AMCU) 14.

PHOTOGRAPHS. A port broadside surface view of *Beaufort* appears in the 1955-56 to 1966-67 editions.

TRANSFERS. PCS 1426 and PCS 1448 were loaned to Republic of Korea Navy on 9 June 1952 and PCS 1445 and PCS 1446 on 26 May 1952, but PCS 1426 was returned to the US Navy in Apr 1963 and stricken from the list.

DISPOSALS. *Attica*, PCS 1383, and *Coquille*, PCS 1400, were scrapped in 1957. *Conneaute*, PCS 1444, *Deming*, PCS 1392, *Eufaula*, PCS 1384, *Provincetown*, PCS 1378, *Rushville*, PCS 1380, and *Winder*, PCS 1378, were stricken from the Navy List in 1957. *Hampton*, PCS 1386, was stricken on 1 July 1959. *Elsmere*, PCS 1413 was disposed of in 1961. *Prescott*, PCS 1423, was stricken on 1 Mar 1962; *McMinnville*, PCS 1401 in Aug 1962, and *Grafton*, PCS 1431, on 1 June 1965.



HOLLIDAYSBURG 1967, United States Navy, Official

COASTAL MINEHUNTER (MHC)

BITTERN MHC 43

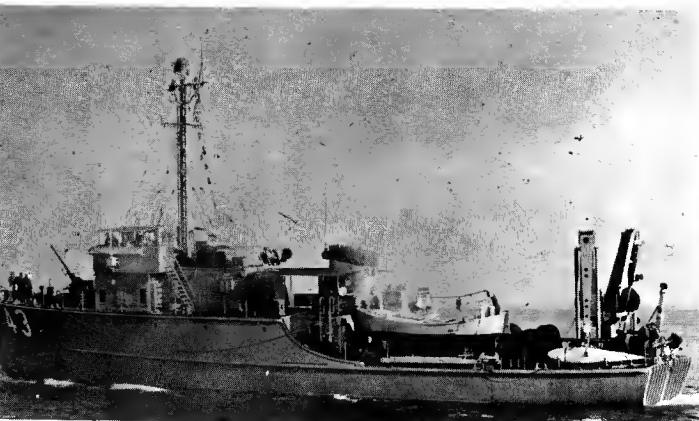
Displacement, tons	300 standard, 360 full load
Dimensions, feet	138 pp, 144.5 oa x 28 x 8
Guns	1—40 mm AA
Main engines	Diesels, 2 shafts, 1 200 bhp = 14 knots
Complément	44 (4 officers, 40 men)

This prototype Mine Hunter (MHC) of wooden construction was built by the Consolidated Shipbuilding Corporation, New York City, at a cost of \$1 782 107, under the 1954 Fiscal Year Programme. Designed to locate mines and other underwater obstacles, rather than to sweep them. To accomplish this she was equipped with various types of electronic instruments in place of minesweeping gear found in coastal minesweepers. To be mass produced in the event of mobilisation. Three more were to have been built under the 1955 Naval Appropriations, but were not started. Built of non-magnetic materials, with bronze aluminium and stainless steel fittings. *Bittern* was laid down on 18 Aug 1955, launched on 4 Mar 1957 and commissioned on 26 Aug 1957. Decommissioned in Sep 1965 and reported to have been loaned to a private firm in July 1966.

PHOTOGRAPHS. A port bow surface view of *Bittern* appears in the 1960-61 to 1966-67 editions.

TRANSFERS. The converted coastal minehunter *Bunting*, MHC 45, was transferred to Brazil in June 1960.

DISPOSALS. All 29 of the converted minehunters of the underwater locator type (8 former coastal minesweepers of the YMS class and 21 former large infantry landing ships of the LSIL class) were stricken on 1 Nov 1959 or 1 Jan 1960. See names, former numbers, and full particulars on page 433 of the 1959-60 edition.



BITTERN 1967, United States Navy, Official

GUNBOATS (PG)

17 New Construction

ASHVILLE PG 84	CANON PG 90	SURPRISE PG 96
GALLUP PG 85	TACOMA PG 92	WELCH PG 97
ANTELOPE PG 86	CHEHALIS PG 94	BEACON PG 99
READY PG 87	DEFIANCE PG 95	
CROCKETT PG 88		
MARATHON PG 89		

Displacement, tons 225 standard, 240 full load
Dimensions, feet 165 oa x 23.5 x 9.5 max
Guns 1—3 in, 50 cal; 1—40 mm AA, 2—50 cal MG
Main engines ADAG (alternate diesel or gas turbine); 2 Cummins V 12 diesels, 1 450 bhp = 30 knots cruising; 1 GE-J 79 gas turbine, 14 000 hp = 40 to 50 knots max
Radius, miles 1 700 at 16 knots; 325 at 35 knots
Complément 28 (4 officers, 24 men)

A new class of gunboats, of aluminium construction with a scheduled eventual total of 24 boats. The new design emphasises cruising endurance, seaworthiness and payload capability to provide a relatively high speed craft with maximum simplicity and ease of maintenance compatible with these features. Controllable pitch propellers. Stop to 40 knots in one minute. PGs are the largest all-aluminium hulls in the US Navy. *Ashville* was laid down on 15 Apr 1964, launched on 1 May 1965, and commissioned on 6 Aug 1966. *Gallup* was laid down on 27 Apr 1964, launched on 15 June 1965, and commissioned on 22 Oct 1966. All built by Tacoma Boatbuilding Co, Inc Wash, except 93, 95, 97, 99, 101, by Petersen Builders Inc, Sturgeon Bay, Wisc. *Antelope* and *Ready* authorised in FY 1964, PGM 88, 89 and 90 in 1965, PGM 92 to 101 in 1966. Reclassified from PGM to PG on 1 Apr 1967. PG 91 and 102-111 building for MAP.



ASHVILLE 1966, courtesy Mr A. W. Harris

FAST PATROL BOATS (PTF)

8 + 10 New Construction

PTF 3	PTF 6	PTF 10	PTF 12	PTF 17-22
PTF 5	PTF 7	PTF 11	PTF 13	PTF 23-26
Displacement, tons	64 light, 69 standard; 76 full load			
Dimensions, feet	75.5 pp, 80.3 oa x 24.5 x 6.8			
Guns	2—40 mm AA (single); 2—20 mm AA (single)			
Main engines	2 Napier-Deltic diesels; 6 200 bhp = 45 knots			
Complément	19 (3 officers, 16 men)			

PTF 3—16 were built by Boatservice Ltd A/S, Mandal, Norway. PTF 3 and PTF 4 were delivered to the USA in Dec 1962 and armament and electronic equipment installed in the USA in 1963. PTF 5, 6, 7 and 8 were acquired and designated on 1 Mar 1964, PTF 9, 10, 11, 12, 13, 14, 15 and 16 (announced) on 2 Sep 1964. PTF 4 was stricken from the Navy List in 1965, PTF 8, PTF 9, PTF 14, PTF 15 and PTF 16 in 1966. PTF 1 and PTF 2 were stricken on 1 Aug 1965, and expended as targets.

NEW CONSTRUCTION. PTF 12-72 are being built by John Trumpy & Sons, Annapolis, Md, for \$5 299 470. Two Napier Deltic diesels, 3 100 hp each.



PTF 1965, Boatservice Ltd A/S

HYDROFOIL RESEARCH SHIP (AGEH)

PLAINVIEW AGEH 1	
Displacement, tons	310 full load
Dimensions, feet	212 oa x 40.5 x 10 (foils extended), 26 (withdrawn)
Main engines	2 GE gas turbines, 30 000 hp; 2 diesels, 1 200 hp
Complément	20 (6 officers, 14 men)

Experimental Hydrofoil, Aluminium. Three retractable foils, 25 ft in height, each weighing 7 tons, fitted port and starboard and on stern, and used in waves up to 15 feet. Initial maximum speed of about 50 knots, with later modifications expected to raise the speed to 80 knots. Fitted with the largest titanium propellers made. The two 15 000 hp gas turbines are General Electric J-79 jet aircraft engines modified for marine use. Power plant and transmission designed to permit future investigation of various types of foils. Built by Lockheed Shipbuilding & Construction Co, Seattle, Washington, for \$11 795 000. Laid down on 8 May 1964, launched on 28 June 1965, and commissioned on 6 Aug 1966.



PLAINVIEW 1967, United States Navy, Official

SUBMARINE TENDERS (AS)

2 New Construction AS

L. Y. SPEAR AS 36	AS 37
Displacement, tons	22 640 full load
Dimensions, feet	643 x 85
Guns	2-5 in (single); 4-50 cal MG

AS 36 in the Fiscal Year 1965 Programme. AS 37 in the 1966 Programme (cost \$36 427 000). Designed primarily to support nuclear powered attack submarines. Will have logistic capability for 12 SSN, simultaneous complete, alongside services for four SSN, and facilities for the repair of nuclear power plants. To be built by General Dynamics, Quincy. L. Y. Spear was laid down on 5 May 1966.

2 New Construction AS (FBM)

SIMON LAKE AS 33	CANOPUS AS 34
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Displacement, tons	21 450 to 22 250 full load
Dimensions, feet	643.7 x 85 x 30
Guns	4-3 in, 50 cal in twin mountings amidships
Main engines	Steam turbines
Boilers	2 Combustion Engineering; 630 lb/sq in; 850 deg F
Complement	1 075 (55 officers, 1 020 men)
Accommodation	1 387 officers and men

Simon Lake was authorised in the Fiscal Year 1963 Programme. This ship is of new and improved design over those provided in the 1960 and 1962 Programmes. Her primary purpose is to provide full mobile base facilities and support for nuclear powered submarines including F8M submarines. This includes a full nuclear reactor support capability and facilities for handling, replacement and limited servicing of the Polaris missiles. She is designed to support fully nine SSBNs with as many as three simultaneously receiving complete alongside services. A large gantry crane with athwartships bridge travel and extremely accurate controls will be provided in order to on and off load missiles and nuclear containers from the submarines. Built by Puget Sound Naval Shipyard, Bremerton, Wash. for \$73 000 000. Construction began in Oct 1962. The keel was laid down on 7 Jan 1963 and she was launched on 8 Feb 1964 and commissioned on 7 Nov 1964. Her sister ship, Canopus was authorised under the Fiscal Year 1964 New Construction Programme. Built by Ingalls Shipbuilding Corp at a cost of \$34 812 350. Her keel was laid on 2 Mar 1964 and she was launched on 12 Feb 1965 and commissioned on 4 Nov 1965. The third and final F8M tender, AS 35, was authorised in the Fiscal Year 1965 New Construction Programme, but was deferred.

NOMENCLATURE. Submarine tenders are named after pioneers in submarine development. AS 33 was named after Simon Lake whose Torpedo Boat Company produced its first submarine for the United States Navy in 1912. Simon Lake served as adviser to the Navy during the Second World War until his death on 23 June 1945.

PHOTOGRAPHS. A starboard bow surface view of Simon Lake appears in the 1965-66 edition.



SIMON LAKE 1966

2 "Hunley" Class

HUNLEY AS 31	HOLLAND AS 32
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Displacement, tons	10 500 standard; 18 300 full load
Dimensions, feet	599 x 83
Guns	4-3 in, 50 cal, in twin mountings
Main engines	10 Fairbanks-Morse diesel electric; 12 000 kw; 1 shaft 15 000 bhp = 19 knots
Complement	1 081 (58 officers, 1 023 men) plus accommodation for 30 officers and 270 men from submarines

Tenders for serving Polaris submarines. Hunley was authorised in the Fiscal Year 1960 New Construction Programme and built by Newport News Shipbuilding & Drydock Co, Newport, Virginia, at a cost of \$28 680 000. She provides weapon and nuclear logistic support for ballistic missile submarines. A large hammerhead crane of 32 tons capacity with athwartships bridge travel, the first of its kind aboard a ship, is installed to on and off load missiles from submarines. Laid down on 28 Nov 1960. Launched on 28 Sep 1961. Commissioned 16 June 1962. Completed 4 Aug 1962. Holland was authorised under the 1962 Programme. Built by Ingalls Shipbuilding Corp for \$24 359 800. Laid down on 5 Mar 1962. Launched on 19 Jan 1963. Commissioned on 7 Sep 1963. Equipped with 52 workshops and a helo platform.

NOMENCLATURE. Holland is named after John Philip Holland, a British emigrant to the United States, who became "the father of the submarine". One of his submarines was accepted by the Navy in 1900 and became Submarine Torpedo Boat No. 1, named Holland, the first successful Navy submarine.

PHOTOGRAPHS. A port quarter oblique aerial view of Holland appears in the 1964-65 to 1966-67 editions.



HUNLEY 1967, United States Navy, Official

Submarine Tenders—continued

7 "Fulton" Class

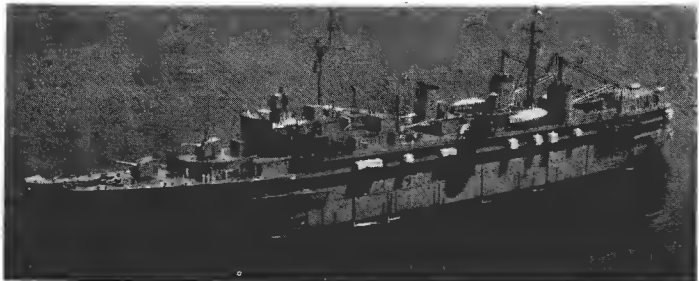
5 Mare Island Navy Yard AS	NEREUS (12 Feb 1945) AS
BUSHNELL (14 Sep 1942) 15.	SPERRY (17 Dec 1941) 12
FULTON (27 Dec 1940) 11	2 Moore Dry Dock Co, Oakland, Calif
HOWARD W GILMORE	ORION (14 Oct 1942) 18
(ex-Neptune, 16 Sep 1943) 16	PROTEUS (12 Nov 1942) 19

Displacement, tons	9 734 standard; 18 000 full load
Dimensions, feet	Proteus: 10 234 standard; 18 500 full load
Guns	530-5; Proteus 574-5 oa x 73-3 x 25-5 max 2-5 in, 38 cal (After 2-5 in guns and 10-40 mm AA guns removed in Sep 1960)
Main engines	GM diesel electric; 11 200 bhp = 15-4 knots
Complement	444 to 1 470 (total accommodation)

Fulton was authorised under 1938 Programme, others under 1950. Launch dates above. Ships vary in detail.

CONVERSION. Proteus, AS 19 was converted at the Charleston Naval Shipyard, under the Fiscal Year 1959 Conversion Programme, at a cost of \$23 000 000 to serve the Nuclear Powered Fleet Ballistic Missile Submarine Squadron. Conversion was started on 19 Jan 1959 and she was recommissioned on 8 July 1960. She was lengthened by adding a section amidships 44 feet in length, and the bare hull weight of this 6-deck high insertion was approximately 500 tons. Nereus AS 17, underwent a 4-month conversion in Nov 1959 to Feb 1960, for facilities to service nuclear powered submarines. Her after guns were removed and her upper decks extended aft to provide additional workshops. Bushnell, Fulton, Howard W. Gilmore, Nereus, Orion and Sperry have undergone FRAM II conversion to handle nuclear powered submarines.

PHOTOGRAPHS. A photograph of Fulton appears in the 1958-59 and 1959-60 editions, of Orion in the 1950-51 to 1957-58 editions, of Proteus in the 1961-62 to 1965-66 editions.



BUSHNELL 1964, United States Navy, Official



NEREUS 1967, United States Navy, Official

1 "Aegir" Class

AEGIR AS 32	
Displacement, tons	8 100 standard; 16 100 full load
Dimensions, feet	492 oa × 69.5 × 26.5 max
Guns	1—5 in, 38 cal; 4—3 in, 50 cal
Main engines	Westinghouse geared turbines; 8 500 shp = 18.4 knots

Launched in 1943 and completed in 1944. Built by Ingalls Shipbuilding Corp. CS-3-A2 type. Accommodation, Headquarters and Berthing ship for the San Diego Inactive Ships Maintenance Facility.

DISPOSALS. Of three sister ships, Anthedon, AS 24 and Clyde AS 26 were stricken from the list of naval vessels on 1 Sep 1961, and Apollo AS 25, transferred to the Maritime Administration in 1963, was stricken in 1964.

2 "Griffin" Class

GRIFFIN (ex- <i>Marmacpenn</i> , 10 Nov 1939) AS 13	
PELIAS (ex- <i>Mormacyork</i> , 14 Nov 1939) AS 14	
Displacement, tons	8 600 standard; 14 500 full load
Dimensions, feet	492 x 69.5 x 24.2 max
Guns	4-3 in, 50 cal
Main engines	4 sets 8usch-Sulzer diesels; 8 500 bhp = 16.5 knots

C3 Cargo type. Launch dates above. Completed on 31 July 1941 and 5 Sep 1941, respectively. 80th in the Pacific Reserve Fleet. Pelias is Accommodation/Berthing ship at Mare Island, California. Griffin is Headquarters ship at Stockton, California.

PHOTOGRAPHS. A photograph of Pelias appears in the 1952-53 to 1960-61 editions.

1 "Euryale" Class

EURYALE (ex-SS <i>Hawaiian Merchant</i>) AS 22	
Displacement, tons	8 282 standard; 15 400 full load
Dimensions, feet	492.5 oa × 69.5 × 25
Guns	1—5 in, 38 cal; 4—3 in, 50 cal
Main engines	De Laval geared turbine; 8 500 shp = 16.5 knots

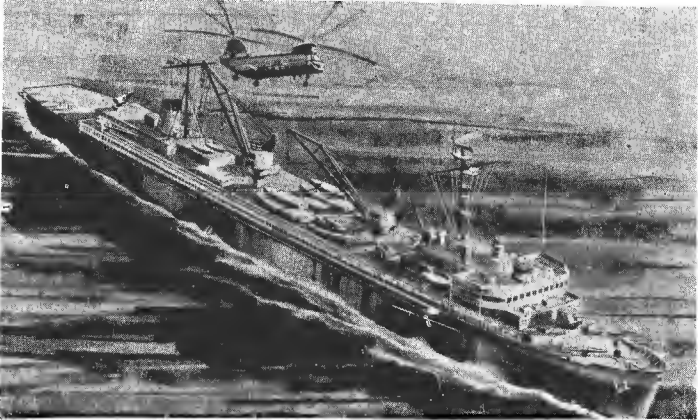
Launched in 1941. Acquired by the US Navy in 1943. Modified C3 type. In the Pacific Reserve Fleet. Headquarters ship at Bremerton, Wash.

DESTROYER TENDERS (AD)

2 New Construction

SAMUEL GOMPERS AD 37		PUGET SOUND AD 38	
Displacement, tons	20 500 to 21 600 full load		
Dimensions, feet	643 × 85		
Guns	1—5 in, 38 cal		
Main engines	20 000 hp = over 18 knots		
Complement	1 803 (135 officers, 1 668 men)		

Samuel Gompers in the first Destroyer Tender of post-Second World War design. She will have repair, supply and support facilities for new destroyer types, missile systems, anti-submarine warfare weapons and equipments, advanced communications and electronic systems and nuclear propulsion plants. She will be able to furnish in port service to six guided missile destroyers alongside simultaneously. Cost \$37 000 000. The ship was authorised under the Fiscal Year 1964 new construction programme, laid down on 9 July 1964 and launched on 14 May 1966. *Puget Sound* was authorised in the 1965 programme, laid down in 15 Feb 1965, launched on 16 Sep 1966 and commissions on 9 Mar 1968. Both built by Puget Sound Naval Shipyard.



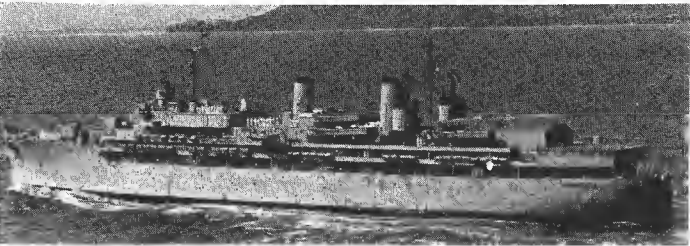
NEW AD 1963, United States Navy, Official

5 "Dixie" Class

2 New York SB Corp		3 Tampa SB Co	
DIXIE (27 May 1939)	AD 14	PIEDMONT (7 Dec 1942)	AD 17
PRAIRIE (9 Dec 1939)	AD 15	SIERRA (23 Feb 1943)	AD 18
		YOSEMITE (16 May 1943)	AD 19

Displacement, tons	9 450 standard; 17 176 full load
Dimensions, feet	520 wl; 530.5 oa × 73.3 × 25.5
Guns	2—5 in, 38 cal
Main engines	Geared turbines; 2 shafts; 11 000 shp = 19.6 knots
Complement	1 076 to 1 698 (total accommodation)

Launch dates above. *Dixie* and *Prairie* completed in 1940, the others in 1944. All underwent FRAM II conversion with helicopter platform and hangar; heliport and repair facilities to service DASH drones and store homing torpedoes; and bays for guided missile servicing. The two after 5 inch guns and the eight 40 mm AA guns were removed. PHOTOGRAPHS. A photograph of *Dixie* appears in the 1954-55 to 1957-58 editions. a starboard quarter view of *Prairie* in the 1958-59 to 1961-62 editions, and a port bow view of *Prairie* in the 1962-63 and 1964-63 editions.

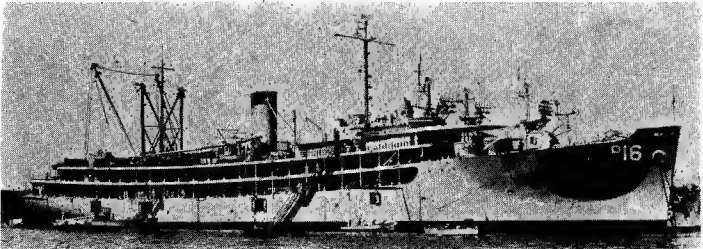


PIEDMONT 1964, United States Navy, Official

1 "Cascade" Type

CASCADE AD 16	
Displacement, tons	9 800 standard; 16 600 full load
Dimensions, feet	492 oa × 69.5 × 27.2 max
Guns	2—5 in, 38 cal; 6—40 mm AA
Main engines	Turbines; 8 500 shp = 18.4 knots
Complement	857 (total accommodation)

Built by Western Pipe & Steel Co, San Francisco, C3-S1-N2 type. Launched on 7 June 1942 and commissioned on 12 Mar 1943



CASCADE 1963, Captain Aldo Fraccaroli

Destroyer Tenders—continued

9 "Arcadia" Class

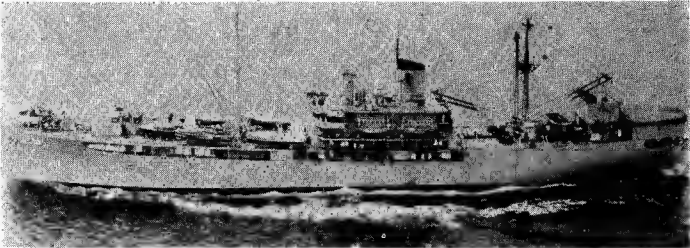
		AD	
ARCADIA (19 Nov 1944)	23	ISLE ROYALE (19 Sep 1945)	29
BRYCE CANYON (7 Mar 1946)	36	SHENANDOAH (29 Mar 1945)	26
EVERGLADES (28 Jan 1945)	24	TIDEWATER (30 June 1945)	31
FRONTIER (25 Mar 1945)	25	YELLOWSTONE (12 Apr 1945)	27
GRAND CANYON (17 Apr 1945)	28		

Displacement, tons	8 165 standard; 16 635 to 16 900 full load
Dimensions, feet	465 wl; 492 oa × 69.5 × 27.2
Guns	1—5 in; 4—3 in; 4—40 mm AA
Main engines	Geared turbines; 8 500 shp = 18.4 knots
Boilers	2 Foster-Wheeler or Babcock & Wilcox
Complement	778 to 918 (total accommodation)

Constructed by Todd Shipyards (*Arcadia*, *Grand Canyon*, *Shenandoah*, *Yellowstone*), Charleston Navy Yard (*Bryce Canyon*, *Tidewater*), Los Angeles SB & DD Co (*Everglades*, *Frontier*) and Tacoma-Pacific Shipyard (*Isle Royale*). Three other ships (*Arrowhead*, *Canopus*, *New England*) were cancelled in 1945, and a fourth (*Great Lakes*) sold. *Frontier* was first commissioned on 2 Mar 1946. *Bryce Canyon* was completed on 20 Dec 1949. C 3 type. Ships vary in appearance. *Shenandoah* is fitted with ASROC and DASH shops, and a helo platform. Sister ship *Klondyke*, AD 22, recommissioned on 1959, and was reclassified as AR 22 on 20 Feb 1960.

REHABILITATION. *Isle Royale* which had been in reserve status almost ever since she was built by Tacoma-Pacific Shipyard, Inc, Seattle, Washington, and first commissioned on 26 Mar 1946 was brought forward for rehabilitation in Jan 1962, recommissioned on 9 June 1962, overhauled in the Long Beach Navy Shipyard, and became ready for fleet service on 1 Jan 1963.

PHOTOGRAPHS. A photograph of *Grand Canyon* appears in the 1958-59 to 1961-62 editions.



SHENANDOAH 1963, United States Navy, Official



FRONTIER 1962, Hiroyuki Otani

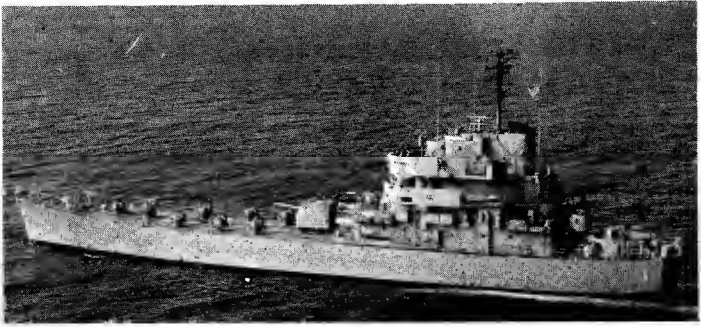
INSHORE FIRE SUPPORT SHIP (IFS)

1 Rocket Type

CARRONADE IFS 1	
Displacement, tons	1 040 light; 1 500 full load
Dimensions, feet	245 × 39 × 10
Guns	1—5 in; 8 rocket throwers
Main engines	Fairbanks-Morse diesels, Geared drive; 2 shafts; con trollable pitch propellers; 3 100 bhp = 15 knots
Complement	139 (9 officers, 130 men)

Designed to support troops in amphibious landings. Main armament comprises rapid fire rocket launchers. Built by Puget Sound Bridge & Dredging Co. Keel laid on 19 Nov 1952. Launched on 26 May 1953. Commissioned on 25 May 1955. Decommissioned in 1960. Recommissioned in 1965.

PHOTOGRAPHS. A larger starboard quarter oblique aerial view of *Carronade* appears in the 1956-57 to 1959-60 editions, and a port bow oblique aerial view in the 1960-61 to 1966-67 editions.



CARRONADE 1967, United States Navy, Official

DOCK LANDING SHIPS (LSD)

5 New Construction

ANCHORAGE	LSD 36	LSO 37	LSD 38	LSO 39	LSD 40
Displacement, tons	13 650 full load				
Dimensions, feet	555 × 84				
Guns	8—3 in, 50 cal (4 twin)				

LSD 36, 1965 Programme, being built by Ingalls SB Corpn; LSD 37, 38, 39, 1966 Programme and LSD 40, 1967 programme, by General Dynamics Corpn, Quincy, Mass.

8 "Thomaston" Class

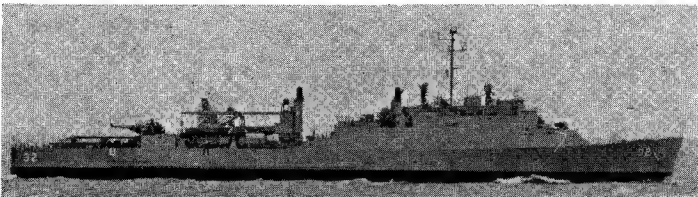
	LSD		LSD
THOMASTON (9 Feb 1954)	28	SPEIGEL GROVE (10 Nov 1955)	32
PLYMOUTH ROCK (7 May 1954)	29	ALAMO (20 Jan 1956)	33
FORT SNELLING (16 July 1954)	30	HERMITAGE (12 June 1956)	34
POINT OEFIANCE (28 Sep 1954)	31	MONTICELLO (10 Aug 1956)	35

Displacement, tons	6 880 light; 11 270 full load; <i>Alamo, Hermitage, Monticello, Spiegel Grove</i> : 12 150 full load
Dimensions, feet	510 oa × 84 × 19 max
Guns	12—3 in, 50 cal (see <i>gunnery</i>)
Main engines	Steam turbines: 2 shafts; 23 000 shp = 24 knots
Boilers	2
Complement	305 plus 100 marines

Larger and faster than earlier types. Built by Ingalls Shipbuilding Corp. Fitted with helicopter landing platforms, and two 50 ton cranes, 21 LCM (6) or 3 LCU and 6 LCM, and 3 to 8 helicopters can be carried. Launch dates above.

GUNNERY. Two twin 3 inch, 50 cal mountings were removed in 1962.

PHOTOGRAPHS. A photograph of *Thomaston* appears in the 1955-56 to 1959-60 editions, of *Monticello* in the 1960-61 to 1963-64 editions, of *Hermitage* in the 1964-65 to 1966-67 editions.



SPIEGEL GROVE courtesy Dr Aldo Fraccaroli

13 "Cabildo" Class

	LSD		LSD
CABILDO (28 Dec 1944)	16	FORT MARION (22 May 1945)	22
CASA GRANDE (ex-Spear, ex-Portway, 11 Apr 1944)	13	RUSHMORE (ex-Sword, ex-Swashway, 10 May 1944)	14
CATAMOUNT (27 Jan 1945)	17	SAN MARCOS (10 Jan 1945)	25
COLONIAL (28 Feb 1945)	18	SHAOWELL (ex-Tomahawk, ex-Waterway, 24 May 1944)	15
COMSTOCK (28 Apr 1945)	19	TORTUGA (21 Jan 1945)	26
DONNER (6 Apr 1945)	20	WHETSTONE (18 July 1945)	27
FORT MANDAN (1945)	21		

Displacement, tons	4 790 standard; 9 375 full load
Dimensions, feet	475.4 oa × 76.2 × 18 max
Guns	12—40 mm AA
Main engines	Geared turbines; 2 shafts; 7 000 shp = 15.4-knots
Boilers	2, two-drum single pass
Complement	265 (15 officers, 250 men)

Built by Newport News (13, 14, 15, 16, 17, 18, 19), Boston Navy Yard (20, 21, 26, 27), Gulf S8 Corp (22) and Philadelphia Navy Yard (25). Can carry 3 LCUs or 18 LCMs. In this class the 5-inch gun and all 20 mm guns have been removed. All ships are fitted with helicopter platforms. (*Fort Snelling* LSD 23, is now the cargo ship *Taurus* T-AK 273, see later page). *Catamount* LSD 17, *Colonial* LSD 18, *Donner* LSD 20, *Fort Mandan* LSD 21, and *Fort Marion* LSD 22, were modernised under the FRAM Mark II Programme in 1960-62. *Donner* LSD 20, and *Shadwell* LSD 15, are fitted as amphibious assault carriers for marine helicopter operations.

PHOTOGRAPHS. A photograph of *Rushmore* appears in the 1952-53 to 1959-60 editions, and of *Catamount* and *Fort Mandon* in the 1947-48 to 1951-52 editions.



DONNER (helicopter aft) 1965, Dr Giorgio Arra

7 "Ashland" Class

	LSD		LSD
ASHLANO (21 Dec 1942)	1	GUNSTON HALL (1 May 1943)	5
BELLE GROVE (17 Feb 1942)	2	LINDENWALD (11 June 1943)	6
CARTER HALL (4 Mar 1943)	3	OAK HILL (25 June 1943)	7
EPPING FORREST (2 Apr 1943) (ex-LSD 4)	MCS 7		

Displacement, tons	4 790 standard; 8 700 limit; <i>Guston Hall, Lindenwald</i> , 5 480 standard; 9 200 full load
Dimensions, feet	454 wl; 475.4 oa × 72 × 18
Guns	12—40 mm AA
Main engines	2 Skinner Unaflo; 2 shafts; 7 400 ihp = 13 knots
Boilers	2, of 2-drum type
Complement	15 officers, 250 men (total accommodation 326)

Dock Landing Ships—continued

"Ashland" Class—continued

All built by Moore Dry Dock Co. Designed to serve as parent ships for landing and coastal craft. *Gunston Hall* and *Lindenwald* were adapted to Arctic service in 1949. The 5-inch gun and all 20 mm guns were removed. All carry 18 flat nosed LCMs (Landing Craft Medium) or 3 LCUs in their well deck running three-quarters of their length. Length of well in open 252 feet, width of well 44 feet. In each LCM a smaller LCVP (Landing Craft, Vehicle-Personnel) can be carried. All fitted with a helicopter landing platform over the well-deck. *Epping Forrest*, employed as a minecraft tender in the Far East, was reclassified as MCS 7 on 30 Nov 1963. *Oak Hill*, LSD 7, was modernised under the FRAM Mark II Programme in 1960 and *Belle Grove*, LSD 2, in 1961.

PHOTOGRAPHS. A port broadside aerial view of *Oakhill* appears in the 1965-66 and 1966-67 editions.

TRANSFER. *White Marsh*, LSD 8, was transferred to Taiwan, China on 17 Nov 1960.



ASHLAND 1967, A. & J. Pavia

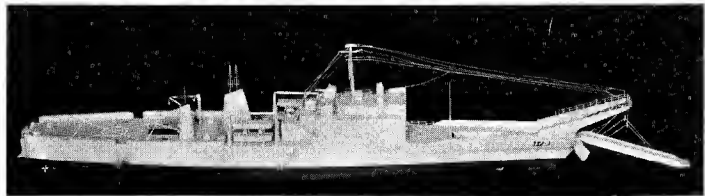
TANK LANDING SHIPS (LST)

20 New Construction

LST	LST	LST	LST
1179 NEWPORT	1184	1189	1194
1180 MANITOWOC	1185	1190	1195
1181 SUMTER	1186	1191	1196
1182	1187	1192	1197
1183	1188	1193	1198

Displacement, tons	8 342 full load (revised figures)
Dimensions, feet	522.3 oa × 69.5
Guns	4—3 in, 50 cal (2 twin)
Main engines	6 Alco diesels, twin screws = 20 knots sustained speed (designed)
Complement	231 (14 officers, 217 men). Accommodation for 430 troops

LST 1179, 1965 Programme, and LST 1180, 1181, 1966 Programme, being built by Philadelphia Naval Shipyard. LST 1182 to 1187 also 1966 Programme. LST 1188 to 1198 in 1967 Programme. New class, which does not have bow doors. Retractable 112 ft bow ramp for unloading onto a pontoon causeway to the beach. Stern ramp for loading and unloading amphibious vehicles in deep water. Over-the-bow ramp permits sharper prow design for top speed. *Newport* laid down 1 Nov 1966, *Manitowac* 27 Feb 1967. LST 1182 to 1198 awarded to National Steel & Shipbuilding, San Diego, under \$249 900 000 construction contract.



NEWPORT 1967, United States Navy, Official

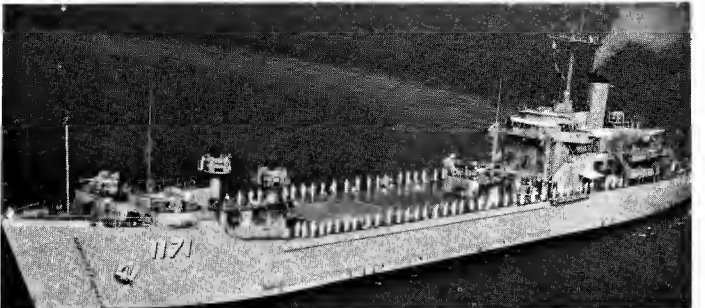
7 "Suffolk County" Class

Name	LST	Builder	Launched
OE SOTO COUNTY	1171	Avondale, New Orleans	28 Feb 1957
SUFFOLK COUNTY	1173	Boston Navy Yard	5 Sep 1956
GRANT COUNTY	1174	Avondale, New Orleans	12 Oct 1956
YORK COUNTY	1175	Newport News SB & DD Co	5 Mar 1957
GRAHAM COUNTY	1176	Newport News SB & DD Co	19 Sep 1957
LORAIN COUNTY	1177	American SB Co, Lorrain	22 June 1957
WOOD COUNTY	1178	American S8 Co, Lorrain	14 Dec 1957

Displacement, tons	4 164 light; 8 000 full load
Dimensions, feet	442 oa × 62 × 16.5
Guns	6—3 in, 50 cal (3 twin)
Main engines	6 Nordberg diesels (4 larger in <i>Graham County</i>); 2 shafts; controllable pitch propellers; 14 400 bhp = 16 knots
Complement	184 (10 officers, 174 men)

Greater speed, size and troop capacity than previous LSTs. Air conditioned. Contract for LST 1172 not awarded. *Suffolk County* commissioned on 15 Aug 1957, *De Soto County* on 10 June 1958, *Graham County* on 14 Apr 1958, *Lorain County* on 30 Aug 1958, *Wood County* on 5 Aug 1959.

PHOTOGRAPHS. A photograph of *Suffolk County* appears in the 1959-60 editions, and of *York County* in the 1960-61 to 1964-65 editions.



DE SOTO COUNTY 1965, direct from Commanding Officer

Tank Landing Ships—continued

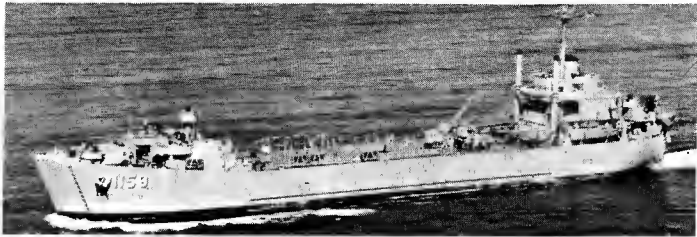
15 "LST 1156-1170" Series

TERREBONNE PARISH	LST 1156	WALDO COUNTY	LST 1163
TERRELL COUNTY	LST 1157	WALWORTH COUNTY	LST 1164
TIOGA COUNTY	LST 1158	WASHOE COUNTY	LST 1165
TOM GREEN COUNTY	LST 1159	WASHTENAW COUNTY	LST 1166
TRAVERSE COUNTY	LST 1160	WESTCHESTER COUNTY	LST 1167
VERNON COUNTY	LST 1161	WEXFORD COUNTY	LST 1168
WAHIAKUM COUNTY	LST 1162	WHITFIELD COUNTY	LST 1169
		WINDHAM COUNTY	LST 1170

Displacement, tons	2 590 light; 5 800 full load
Dimensions, feet	384 oa x 55 x 17
Guns	6—3 in, 50 cal (3 twin)
Main engines	4 GM diesels, 2 shafts; controllable pitch propellers; 6 000 bhp = 15 knots
Complement	116

Design is modification of that of two experimental ships constructed during the Second World War. LST 1156 was launched on 9 Aug 1952, 1158 on 11 Apr 1953, 1163 on 17 Mar 1953, 1156-1160 were built by 8ath Iron Works, 1166-1170 by Christy Corporation, and 1161-1165 by Ingalls Shipbuilding Corporation.

PHOTOGRAPHS. A photograph of *Tioga County* appears in the 1954-55 to 1959-60 editions, and of *Waldo County* in the 1960-61 to 1964-65 editions.



TOM GREEN COUNTY 1965, United States Navy, Official

2 Steam Type

TALBOT COUNTY LST 1153 TALLAHATCHIE COUNTY (ex-LST 1154) AV8 2

Displacement, tons	2 324; 6 000 full load
Dimensions, feet	368 wl; 382 oa x 54 x 17
Guns	2—5 in, 38 cal; 4—40 mm AA
Main engines	Geared turbines; 2 shafts; 6 000 shp = 14 knots
Complement	82

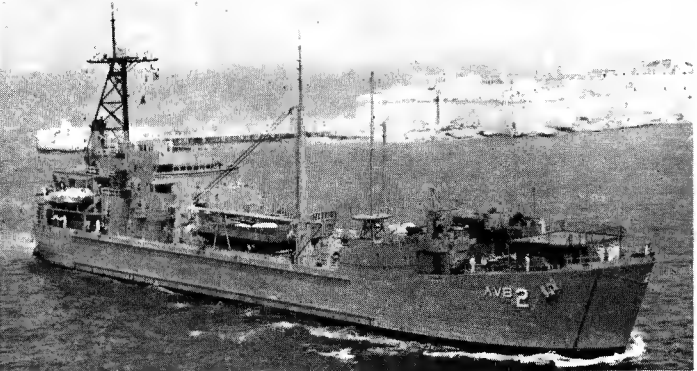
Built by Boston Navy Yard. *Talbot County* was launched on 24 Apr 1947 and completed on 3 Sep 1947; *Tallahatchie County* was launched on 19 July 1946 and completed on 9 June 1949. They are the only steam powered LSTs. This type can carry 4 small landing craft and has increased troop accommodation, greater tank vehicle and cargo capacity and improved arrangements for discharge, compared with the "LST 1-1152" class.

CONVERSION. *Tallahatchie County* was converted to an advance aviation base ship, AV8, at the Naval Shipyard, Charleston, SC, in the Fiscal Year 1960 conversion programme, and recommissioned on 20 Jan 1962. Conversion completed on 13 Mar 1962. Fitted with new all aluminium superstructure, maintenance shops, communications, weather forecasting, briefing rooms and a portable tower for aircraft control. Accommodation for 270 man aircraft squadron in addition to crew of 15 officers and 200 men.

PHOTOGRAPHS. A starboard quarter oblique aerial view of *Talbot County* appears in the 1960-61 to 1966-67 editions.



TALBOT COUNTY 1967, A. & J. Pavia



TALLAHATCHIE COUNTY 1965, A. & J. Pavia

70 LST 511-1152 Series

CADDO PARISH	LST 515	KEMPER COUNTY	LST 854
CAROLINE COUNTY	525	LITCHFIELD COUNTY	901
CHASE COUNTY (USNS)	532	LUZERNE COUNTY	902
CHEBOYGAN COUNTY	533	MADERA COUNTY	905
CHESTERFIELD COUNTY (USNS)	551	MEEKER COUNTY	980
CHURCHILL COUNTY	583	MIDDLESEX COUNTY	983
CLARKE COUNTY	601	MONMOUTH COUNTY	1032
CLEARWATER COUNTY (USAF)	602	NEW LONDON COUNTY (USNS)	1066
COCONINO COUNTY	603	NYE COUNTY (USNS)	1067
DAVIES COUNTY (USNS)	692	ORLEANS PARISH (USNS)	1069
DE KALB COUNTY (USNS)	715	OUTAGAMIE COUNTY	1073
DODGE COUNTY	722	PAGE COUNTY	1076
DUVAL COUNTY	758	PARK COUNTY	1077
FLOYD COUNTY	762	PITKIN COUNTY	1082
GARRETT COUNTY	786	PLUMAS COUNTY (USNS)	1083
HAMPSHIRE COUNTY	819	POLK COUNTY	1084
HARNETT COUNTY	821	PULASKI COUNTY (USNS)	1088
HARRIS COUNTY (MSTS)	822	ST CLAIR COUNTY	1096
HENRY COUNTY	824	SAN JOAQUIN COUNTY	1122
HICKMAN COUNTY	825	SEDGWICK COUNTY	1123
HOLMES COUNTY	836	SNOHOMISH COUNTY	1126
HUNTERDON COUNTY	838	STONE COUNTY	1141
IREDELL COUNTY	839	SUMMIT COUNTY	1146
JENNINGS COUNTY	846	SUMNER COUNTY	1148
JEROME COUNTY	848	SUTTER COUNTY	1150

Displacement, tons	1 653 standard; 2 366 beaching; 4 080 full load
Dimensions, feet	316 wl; 328 oa x 50 x 14
Guns	8—40 mm AA (USNS are unarmed)
Main engines	GM diesels; 2 shafts; 1 700 bhp = 11.6 knots
Complement	119 (accommodation for 266)

LSTs which previously carried numbers only, were named on 1 July 1955. Cargo capacity 2 100 tons. All reserve LSTs (17 ships) were recommissioned in 1965-66. *Davies County* and LST 664 were reacquired from the Maritime Administration in 1965 and manned by Koreans, as are *Chase County*, *Chesterfield County*, *New London County*, *Nye County*, *Pulaski County*, *De Kalb County* and *Plumas County* are Japanese manned. *Garrett County*, *Jennings County*, *Hunterdon County*, *Harnett County*, fitted as PBR support ships with raised helo deck amidships for service in Vietnam.

UNNAMED SHIPS. LSTs assigned to MSTS: 15 Japanese-manned, LSTs 530, 546, 550, 566, 572, 579, 581, 587, 600, 607, 613, 623, 629, 630, 649. Four others: LSTs 590, 626, 643, 664 are Korean-manned. LST 1072, (unnamed) was on loan to USAF.

PHOTOGRAPHS. A photograph of *Sublette County* appears in the 1954-55 to 1957-58 editions, and of *Polk County* in the 1961-62 to 1966-67 editions.

MODERNISATION. *Holmes County*, LST 836, *Polk County* LST 1084, *Stone County* LST 1141, *Sumner County* LST 1148, were modernised in the 1960 FRAM II programme.



ST CLAIR COUNTY United States Navy, Official

TRANSFERS. LST 1010 was transferred to Korea on 22 Mar 1955, *Iron County* LST 840, *Lafayette County* LST 859, *San Bernadino County* LST 1110, *Sagadahoe County* LST 1091, and *Sweetwater County* LST 1152 to Nationalist China in 1958; *Johnson County* LST 849, *Kane County* LST 853, *Lynn County* LST 900 and *Pender County* LST 1080 to Korea in 1958; *Burnett County* LST 512 to Peru in 1958, *Solana County* LST 1128, to Indonesia in 1960; *Hamilton County* LST 802 to Japan in 1960; *Potter County* LST 1086, to Greece in 1960; LST 849 to Korea, LST 520, LST 535, LST 578 and LST 735 to Taiwan, *Greer County* LST 799, *Rice County* LST 1089, and *Saline County* LST 1101 to West Germany in 1961, *Lawrence County* LST 887 and *Russell County* LST 1090 to Indonesia, *Doggett County* LST 689, *Hillsdale County* LST 835 and *Nansemond County* LST 1064 to Japan in 1961, *Sublette County* LST 1144 to Taiwan China in Jan 1961; *Millard County* LST 987 and *Montgomery County* LST 1041 to West Germany in 1961; LST 616, LST 652 and LST 657 to Indonesia in 1961; *Lincoln County* LST 898 to Thailand in 1962, *Marricopa County* LST 938 and *Marion County* LST 975 to Vietnam in 1962, and *Cayuga County* LST 529 in 1963, *Stark County* LST 1134 to Thailand on 16 May 1966.

DISPOSALS. *Mineral County* LST 983 was destroyed as a target for gunfire, *Ford County* LST 772, *Kent County* LST 855 and *Orange County* LST 1068 were disposed of in 1957, *Cassia County* LST 527, *Hampden County* LST 803 and *Hillsborough County* LST 827 in 1958, *Chittenden County* LST 561 after grounding at Kauai, TH, in Mar 1958, (salvaged after stranding, but torpedoed by the submarine *Sargo* off Oahu in Nov 1958) *Lyman County* LST 903 and *Lyon County* LST 904, were sunk as targets in 1959. *Calaveras County* LST 516, *Crook County* LST 611, *Eddy County* LST 759, *Esmeralda County* LST 761, *Garfield County* LST 784, *Gibson County* LST 794 were stricken in 1959, *Cape May County* LST 521, *Catahoula Parish* LST 528, *Chelan County* LST 542, *Curry County* LST 685, *Douglas County* LST 731, *Juniata County* LST 850, *Lake County* LST 880, *Lamoure County* LST 883, *Lee County* LST 888, *Mahoning County* LST 914, *Marquette County* LST 953, *Morgan County* LST 1048, *Osage County* LST 1071, *Overton County* LST 1074, *Payette County* LST 1079, *Pima County* LST 1081, *Somervell County* LST 1129 and *Stratford County* LST 1142, between 1 June and 30 June 1960. *King County* AG 157 (ex-LST 857) and LST 618 in 1960, *Jefferson County* LST 845, *Steuben County* LST 1138 and *Dunn County* LST 742 were stricken in 1961, *Calhoun County* LST 519 in Nov 1962, *Mahnomon County* LST 912, was stricken in Feb 1967 after grounding in S.E. Asia.

Tank Landing Ships—continued

14 LST 1-510 Series

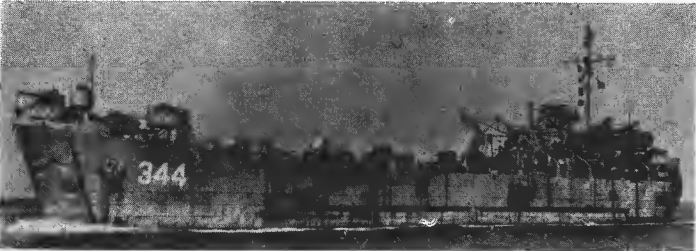
BLANCO COUNTY LST 344	BULLOCH COUNTY LST 509
Displacement, tons	1 625 light; 2 366 beaching; 4 050 full load
Dimensions, feet	328 oa × 50 × 14·3 max
Guns	8—40 mm AA
Main engines	GM diesels, 2 shafts, 1 700 bhp = 10·8 knots
Complement	80 to 119 (plus 147 troops)

These ships are ocean tank carriers with bow doors. In the Second World War LST 32 was fitted with railway lines on the tank deck to enable her to transport trucks from Sicily to the mainland. She was converted to Naval Air Force Atlantic Flagship in 1953. Fitted for advanced base air support, she carried 2 LCM on deck. *Blanco County* and *Bulloch County* recommissioned in 1965. LST 287, stricken in Sep 1962 was reaquired from the Maritime Administration in 1965 and designated USNS.

UNNAMED SHIPS. Following assigned to MSTs, unarmed: 11 Japanese manned, LSTs 47, 117, 176, 222, 230, 276, 277, 399, 456, 488, 491. LST 287 is Korean manned.

TRANSFERS. LST 53 was transferred to Korea, *Berkeley County* LST 227 and *Bradley County* LST 400 to Taiwan China, LST 503 to Taiwan on 29 Apr 1955, LST 218 and LST 227 to Korea in 1955 and *Berkshire County* LST 288 on 5 Mar 1956, LST 503 to Taiwan, *Boon County* LST 389 and *Bowman County* LST 391, to Greece in 1960, *Alameda County* reclassified from LST 32 to AVB 1 (Advance Aviation Base Ship) to Italy in Nov 1962, LST 325 to Greece on 29 May 1964.

DISPOSALS. LST 291 was stricken after grounding in 1954. *Addison County* LST 31, *Armstrong County* LST 57, *Branch County* LST 482, *Brewster County* LST 483 and *Buchanan County* LST 504 were stricken on 11 Aug 1955 and used as targets. *Atchison County* LST 60, *Bamberg County* LST 209, *Benton County* LST 263, *Benzie County* LST 266, *Bernalillo County* LST 306, *Bledsoe County* LST 356 and *Buncombe County* LST 510 on 1 June 1959 and 30 June 1960.



BLANCO COUNTY 1964, courtesy "Our Navy"

MEDIUM LANDING SHIPS LSM

1 LSM 1-558 Series

LSM 335 (USNS)	
Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196·5 wl; 204·5 oa × 34·5 × 8·3
Main engines	Diesel direct drive; 2 shafts; 2 800 bhp = 12·5 knots

Only one medium landing ship remains in service, stationed at Okinawa. This class could carry 5 medium tanks. Some were fitted with Kirsten cycloidal propellers, enabling the ships to turn 360 degrees and remain in the same position. LSM 335 is assigned to MSTs. *Kodiak*, LSM 161 was stricken on 1 June 1965.

NOMENCLATURE. LSM 161, 175, 373 and 540 were named *Kodiak*, *Oceanside*, *Lakeland* and *Raritan* respectively, on 14 Oct 1959, see *Transfers* and *Disposals*. The name *Kodiak* was cancelled on 22 Mar 1965 and reassigned to YF 866.

TRANSFERS. LSM 500 was transferred to Denmark on 15 May 1953. LSMs 17, 19, 30, 54, 57, 84, 96, 268, 316, 419, 462 and 546 to Korea in 1956, LSM 491, LSM 537, LSM 553 and LSM 558 to West Germany on 15 Aug 1959 (first two) and 5 Sep 1958 (other two), LSM 472 and LSM 474 to Taiwan China at Seattle on 3 Feb 1959, LSM 539 and LSM 555 to Ecuador in 1959, LSM 444 *Aoto* to Chile in 1960. LSM 236 to the Philippines on 15 Sep 1960, LSM 483 to the Dominican Republic in 1960, *Oceanside* LSM 175 and LSM 313 to Vietnam in 1961, LSM 320 and LSM 463 to the Philippines on 17 Mar 1961, LSM 469 to Thailand in 1962, LSM 362 to Taiwan China in May 1962, LSM 276 to Vietnam in Mar 1963.

DISPOSALS. All LSMs were stricken from the Navy List in 1957 except 13 LSMs and the two YVs but LSM 455, 491, 533, 537, 541, 557 and 558 were stricken in 1958-59, *Lakeland* LSM 373 and *Raritan* LSM 540 in 1960, *Catapult* YV 1, ex-LSM 445 and *Launcher* YV 2, ex-LSM 446 in 1960, *Hunting* EAG 398 (ex-LSM 398) on 1 Nov 1962.



LSM 335 1967

MEDIUM LANDING SHIPS (ROCKET)

11 LSMR, 1 IX and 1 YV. 401-412, 501-536 Series

	LSMR		LSMR
BIG BLACK RIVER	401	LARAMIE RIVER	513
BROADKILL RIVER	405	OWYHEE RIVER	515
CLARION RIVER	409	RED RIVER	522
DEN PLAINES RIVER	412	ST FRANCIS RIVER	525
KENKOPA (ex-Elk River, LSMR 501) IX 501		SMOKY HILL RIVER	531
TARGETEER (ex-Gunnison River, LSMR 508) YV 3		WHITE RIVER	536
LAMOILLE RIVER	512		

Displacement, tons	944 attack; 1 084 full load
Dimensions, feet	LSMR 410-412; 206·2 oa, 204·2 wl × 34·5 × 7·2 LSMR 501-536; 203·5 oa, 197·2 wl × 34·5 × 7·2
Armament	1—5 in, 38 cal; 8 twin 5 in rocket launchers, 2 twin 40 mm (fwd and aft)
Main engines	GM diesel; 2 shafts; 2 800 bhp = 12·6 knots
Complement	137 (7 officers, 130 men)

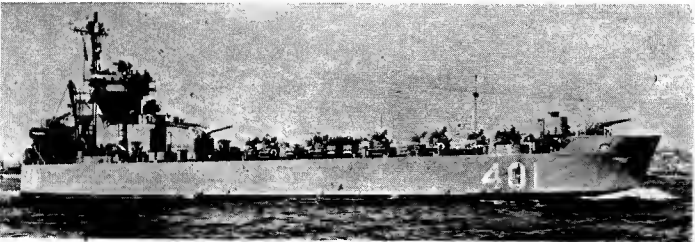
Modified LSMs. The automatic rocket launchers are continuously fed, each firing thirty spin-stabilised 5-inch rockets per minute, a barrage of 240 per clip. All LSMRs were named on 1 Oct 1955. *Clarion River* LSMR 409, *St Francis River* LSMR 525 and *White River* LSMR 536 all recommissioned in 1965.

RECLASSIFICATION. *Gunnison River* LSMR 508, was reclassified as a drone Aircraft Catapult Control Craft, YV 3, on 9 May 1960 and renamed *Targeteer* on 26 June 1960. *Elk River* LSMR 501, was reclassified as IX 501 on 1 Apr 1967 and renamed *Kenkopa*. Converted by Avondale Shipyard, La. Lengthened 21 ft. Fitted with 60-ton gantry crane, two decompression chambers, pressurised elevator system. Employed as tender for SEALAB III programme. Unarmed.

PHOTOGRAPHS. A port bow view of *Owyhee River* appears in the 1957-58 to 1962-63 editions, a starboard bow oblique aerial view of *Blackstone River* in the 1957-58 edition, a starboard broadside surface view of *St Joseph River* in the 1953-54 to 1959-60 editions, a starboard broadside surface view of *St Francis River* in the 1960-61 to 1966-67 editions.

TRANSFERS. *Smyrna River* LSMP 532 and *Thames River* LSMR 534, were transferred to West Germany on 5 Sep 1958 and *St Joseph River* LSMR 527 to Korea in 1960.

DISPOSALS. *Big Horn River* LSMR 402, *Blackstone River* LSMR 403, *Black Warrior River* LSMR 404, *Charlton River* LSMR 407, *Charles River* LSMR 408, *Escalante River* LSMR 502, *Flambeau River* LSMR 503, *Grand River* LSMR 505, *Green River* LSMR 506, *Greenbrier River* LSMR 507, *Holston River* LSMR 509, *Pearl River* LSMR 516, *Pitt River* LSMR 518, *Powder River* LSMR 519, *Rainy River* LSMR 521, *St Croix River* LSMR 524, *St John's River* LSMR 526, *St Mary's River* LSMR 528, *Salmon Falls River* LSMR 530, *Snake River* LSMR 533 and *Trinity River* LSMR 535 were stricken from the Navy List in 1959, and *Canadian River* LSMR 406, *Clark Fork River* LSMR 410, *Cumberland River* LSMR 411, *Gila River* LSMR 504, *James River* LSMR 510, *John Day River* LSMR 511, *Maurice River* LSMR 514, *Pee Dee River* LSMR 517, *Raccoon River* LSMR 520, *Republican River* LSMR 523, and *St Regis River* LSMR 529 on 1 Feb 1960.



BIG BLACK RIVER 1963, United States Navy, Official



TARGETEER (as Aircraft Control Craft) 1961, United States Navy, Official



WHITE RIVER 1967, United States Navy, Official

ATTACK TRANSPORTS (APA)

2 "Paul Revere" Class

FRANCIS MARION (ex-SS *Prairie Mariner*) APA 249
PAUL REVERE (ex-SS *Diamond Mariner*) APA 248

Displacement, tons 10 709 light; 16 838 full load
Dimensions, feet 528 pp; 563 5 oa x 76 x 27 max
Guns 4—3 in, 50 cal in two twin mountings
Main engines GE geared turbines; 1 shaft; 19 250 shp = 20 knots
Complement 414 (35 officers, 379 men)

Paul Revere is a C4-S-1 type cargo vessel converted into an Attack Transport by Todd Shipyard Corp, San Pedro, Calif, under the 1957 Fiscal Year Conversion Programme. Contract was awarded in Aug 1956. Commissioned on 3 Sep 1958 and completed on 29 Sep 1958. She has accommodation for a 1 500 strong Marine Battalion, a helicopter platform on the stern for troop helicopters, and is fitted as an Amphibious Command Flagship. *Francis Marion* was a similar "Mariner" type hull converted into an APA by Bethlehem Steel, Key Highway Yard, Baltimore, Md, under the Fiscal Year 1959 Programme (conversion started on 13 Apr 1959 and the ship was commissioned on 6 July 1961). Both ships were originally built by New York Shipbuilding Corporation, Camden, *Francis Marion* in 1954 and *Paul Revere* in 1953. PHOTOGRAPHS. A starboard bow surface view of *Francis Marion* appears in the 1962-63 to 1966-67 editions.



PAUL REVERE Added 1965, United States Navy, Official

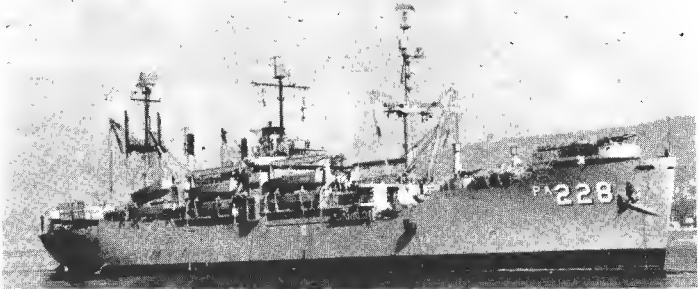
11 "Haskell" Class

	APA		APA		APA
BEXAR	237	MOUNTRAIL	213	ROCKBRIDGE	228
MAGOFFIN	199	NAVARRO	215	SANDOVAL	194
MONTROSE	212	OKANOGAN	220	TALLADEGA	208
		PICKAWAY	222	TELFAIR	210

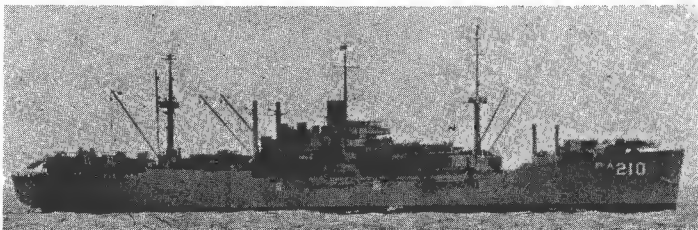
Displacement, tons 6 720 light; 10 470 full load
Dimensions, feet 436 5 wl; 455 oa x 62 x 24
Guns 12—40 mm AA, 1 quadruple, 4 twin (see *Gunnery*)
Main engines Geared turbines; 8 500 shp = 17.7 knots
Boilers 2 Babcock & Wilcox
Complement 536

VC 2-S-AP 5 "Victory" type, all launched in 1944-45. All have County names. Can carry 1 560 troops and 3 000 tons of war stores. *Mountrail* 213, *Sandoval* 194 and *Telfair* 210, were reacquired from the Maritime Administration in 1961, re-instated on the Navy List and recommissioned.

GUNNERY. The 5-inch gun was removed. Scheduled to be replaced by a twin 3-inch, 50 cal.
PHOTOGRAPHS. A photograph of *Pickaway* appears in the 1953-54 to 1958-59 editions, of *Olmster* in the 1959-60 edition and of *Okanogan* in the 1960-61 to 1964-65 editions.
TRANSFER. *Noble* APA 218 was decommissioned on 1 July 1964 and transferred to Spain.
DISPOSALS
Arenac 128, *Barnwell* 132, *Bronx* 236, *Brookings* 140, *Clinton* 144, *Crockett* 148, *Dane* 238, *Edgcombe* 164, *Gage* 168, *Grimes* 172, *Kershaw* 176, *Lavaca* 180, *Lubbock* 197, *McCracken* 198, *Menifee* 202, *Meriwether* 203, *Mifflin* 207, *Missoula* 211, *Natrona* 214, *Nesheba* 216, *New Kent* 217, *Okaloosa* 219, *Oneida* 221, *Rawlins* 226, *Rockingham* 229, *Rutland* 192, *San Saba* 232, *Sherburne* 205, *Sibley* 206 and *Tazewell* 209, were stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in 1959, *Deuel* 160, *Logan* 196, *Rockwall* 230, in 1960. *Deuel* and *Rockwall* were stricken on 1 Dec 1958. *Glynn* 239, *Latimer* 152, *Mellette* 201, *Olmstead* 188, *Randall* 224, *Sanborn* 193, *Sarasota* 204, in 1961. *Botetourt* 136, *Bottineau* 235, *Menard* 201, were stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in 1961. *Lenawee* 195 and *Renville* 227 in 1967.



ROCKBRIDGE 1965, Dr Giorgio Arra



TELFAIR 1967, courtesy Dr Aldo Fraccaroli

Attack Transports—continued

6 "Bayfield" Class

	APA		APA
BAYFIELD (ex-Sea Bass)	33	CHILTON (ex-Sea Needle, 24 Dec 1942)	38
CAMBRIA (ex-Sea Swallow)	36	FREMONT (ex-Sea Corsair, 31 Mar 1943)	44
CAMALIER (15 Mar 1943)	37	HENRICO (ex-Sea Darter, 31 Mar 1943)	45

Displacement, tons 8 100 light; 15 200 full load
Dimensions, feet 465 wl; 492 oa x 69.5 x 26.5
Guns 2—5 in; 4—40 mm AA (2 twin)
Main engines Geared turbines; 8 500 shp = 18.4 knots
Boilers 2 Combustion Engineering type
Complement 250 (554 total accommodation)

C3-S-A2 type, formerly with "Sea" names, but subsequently given County names by the United States Navy.
PHOTOGRAPHS. A starboard broadside surface view of *Chilton* appears in the 1952-53 to 1959-60 editions and a port broadside aerial view of *Henrico* in the 1960-61 to 1963-64 editions.



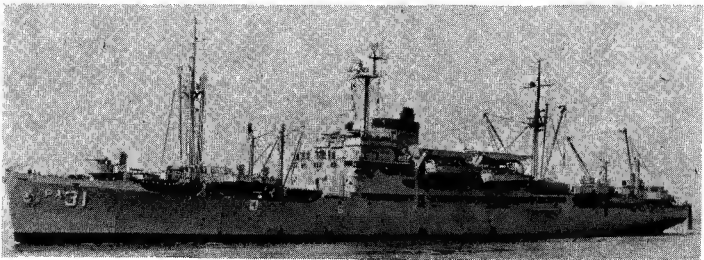
CAM8RIA 1964, Captain Aldo Fraccaroli

1 "Crescent City" Class

MONROVIA (ex-Delargentino, 1942) APA 31

Displacement, tons 8 429 light; 13 590 full load
Dimensions, feet 468 pp; 491 oa x 65.5 x 25.7
Guns 4—3 in; 4—40 mm AA (2 twin)
Main engines Geared turbines; 7 800 shp = 16 knots
Boilers 2 Babcock & Wilcox
Complement 555 (total accommodation)

C3 Delta type. Can carry 1 455 troops. Built by Bethlehem, Sparrows Point.
DISPOSALS
Charles Carroll APA 28 and *Crescent City* APA 21, were stricken from the Navy List in 1959, and transferred to the Maritime Administration Reserve Fleet. *Calvert* APA 22, stricken in Aug 1966, is employed as training hulk for cargo handling at Oakland, Calif.



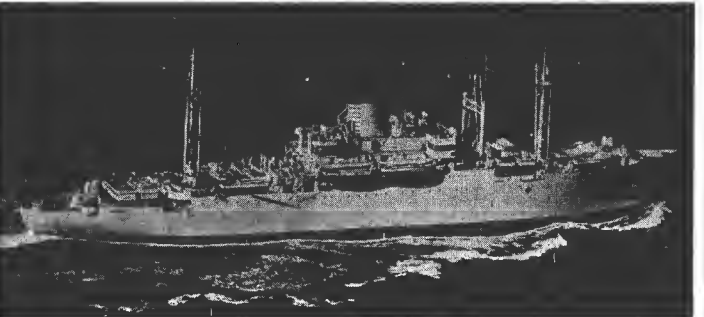
MONROVIA 1967, courtesy Dr. Giorgio Arra

1 "Arthur Middleton" Class

GEORGE CLYMER (ex-African Planet, ex-American Former) APA 27

Displacement, tons 10 812 light; 14 000 full load
Dimensions, feet 465 wl; 489 oa x 69.7 x 27.3
Guns 4—3 in; 4—40 mm AA (2 twin)
Main engines Geared turbines; 7 800 shp. = 16 knots
Complement 512

C-3P type. Can carry 27 landing craft and 1 400 troops. Fitted as a flagship. Launched in 1941.
DISPOSALS
Arthur Middleton APA 25, and *Samuel Chase* APA 26 of the "Arthur Middleton" class, and *President Adams* APA 19, *President Hayes* APA 20, *President Jackson* APA 18 and *Thomas Jefferson* (ex-*President Garfield*) APA 30 (of the "President" class) were stricken from the Navy List in 1959 and transferred to the Maritime Administration Reserve Fleet.



GEORGE CLYMER United States Navy, Official

ATTACK CARGO SHIPS (AKA)

5 New Construction

CHARLESTON AKA 113	AKA 115	AKA 117
DURHAM AKA 114	AKA 116	
Displacement, tons	20 700 full load	
Dimensions, feet	580 × 82	
Guns	8—3 in (4 twin)	

AKA 113-116 authorised in the Fiscal Year 1965 Programme, AKA 117, 1966 Programme. Equipped with helicopter platform. To be built by Newport News Shipbuilding & Dry Dock Co. To cost \$28 000 000 each. Wheelhouse fitted with engine controls. Automated engine room with 3-man watch. *Charleston* was laid down on 5 Dec 1966.

TULARE (ex-Evergreen Mariner) AKA 112

Displacement, tons	12 000 light; 15 970 full load
Measurement, tons	9 200 gross; 13 400 deadweight
Dimensions, feet	528.5 pp; 564 oa × 76 × 26 max
Guns	12—3 in, 50 cal in six twin mountings
Main engines	Turbine; 1 shaft, 22 000 shp = 20 knots
Complement	38 officers, 399 men

Built by Bethlehem, San Francisco. Laid down on 16 Feb 1953, launched on 22 Dec 1953. Acquired by Navy during construction. Commissioned on 13 Jan 1956. C4-S-1 8 type. Has helicopter landing platform and booms capable of lifting 60-ton landing craft. Carries 9 LCM-6 landing craft. Can carry 575 troops and crew, 27 landing craft and 300 vehicles.



TULARE 1960, United States Navy, Official

12 "Andromeda" Class

	AKA		AKA
ALGOL (ex-Jamas Baines)	54	OGLETHORPE (15 Apr 1945)	100
ARNEB (ex-Mischief)	56	THUBAN (26 Apr 1943)	19
CAPRICORNUS (ex-Spitfire)	57	UVALDE (ex-Wild Pigeon) (20 May 1944)	88
MATTHEWS (22 Dec 1944)	96	WINSTON (30 Nov 1944)	94
MERRICK (28 Jan 1945)	97	WYANDOT (28 June 1944) USNS	92
MULIPHEN (26 Aug 1944)	61	YANCEY (8 July 1944)	93
Displacement, tons	7 430 light; 14 000 full load		
Dimensions, feet	435 wl; 459.2 oa x 63 x 24 max		
Guns	8—40 mm AA, 4 twin		
Main engines	Geared turbines; 6 000 shp = 15.5 knots		
Boilers	2 Foster-Wheeler		
Complement	247		

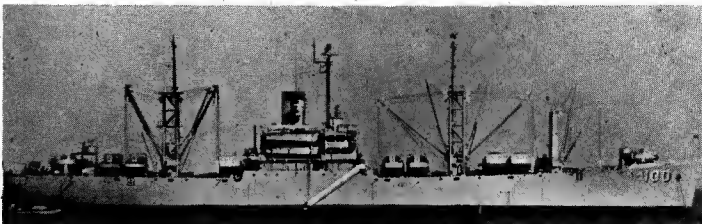
C2-S-81 type. Launch dates above. Can carry over 5 200 tons of cargo and 2 200 tons of tanks. *Arneb* completed refit for Arctic service on 15 Mar 1949. *Wyandot* was also "winterised" with double hull plating. *Matthews* and *Merrick* were reacquired from the Maritime Administration Reserve Fleet by the Navy in 1951, and reactivated. *Algol*, 54, *Ulvade* 88, *Winston* 94, *Wyandot* 92, *Yancey* 93, were reacquired, reinstated on the Navy List, and recommissioned in 1961. *Wyandot* was assigned to MSTs in 1963, designated USNS, with a civil service crew, unarmed. The 5 inch gun has been removed from all active units of the "Andromeda" and "Rankin" classes and is scheduled to be replaced by a twin 3 inch mounting.

PHOTOGRAPHS. Photographs of *Arneb* and *Matthews* appear in the 1957-58 edition. A photograph of *Wyandot* in the 1958-59 to 1959-60 editions and of *Algol* in the 1960-61 to 1966-67 editions.

TRANSFERS. *Whitley* AKA 91, was transferred to Italy in 1962, and *Achernar* AKA 53, to Spain on 2 Feb 1965.



CAPRICORNUS 1965, A. & J. Pavia



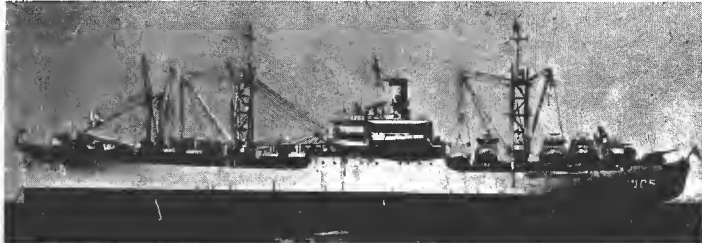
OGLETHORPE 1967, courtesy Dr Aldo Fraccaroli

Attack Cargo Ships—continued

6 "Rankin" Class

RANKIN (22 Dec 1944)	AKA 103	UNION (23 Nov 1944)	AKA 106
SEMINOLE (28 Dec 1944)	AKA 104	VERMILION (12 Dec 1944)	AKA 107
SKAGIT (28 Nov 1944)	AKA 105	WASHBURN (12 Dec 1944)	AKA 108
Displacement, tons	6 456 light; 14 160 full load		
Dimensions, feet	459.2 oa × 63 × 26.3		
Guns	8—40 mm AA (4 twin)		
Main engines	Geared turbines; 1 shaft; 6 000 shp = 16.5 knots		
Complement	247		

C2-S-AJ3 type. Laid down in 1944 and commissioned in 1945. Combat load 4 500 tons. The removed 5-inch gun is scheduled to be replaced by a twin 3-inch mounting. Ten 20 mm AA guns suppressed.



SKAGIT 1960, United States Navy, Official

DISPOSALS OF "ANDROMEDA" CLASS

Alshain 55, *Andromeda* 15, *Chara* 58, *Leo* 60, *Marquette* 95, *Montague* 98, *Rolette* 99, were disposed of in 1961. *Diphda* 59, *Virgo* 20, *Warrick* 89, and *Whiteside* 90, were stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in 1961 but *Chara* and *Virgo* were reacquired in 1965 and reclassified as ammunition ships AE 30 and AE 31, see later page.

DISPOSALS OF OTHER CLASSES

Of the "Libra" class, *Libra* AKA 12 and *Oberon* AKA 14 were disposed of in 1961, and *Titania* AKA 13 was stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in 1961. Of the "Bellatrix" class, *Bellatrix* AKA 3, was disposed of in 1961, but reacquired and transferred to Peru in 1963; and *Electra* AKA 4, was stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in 1961.

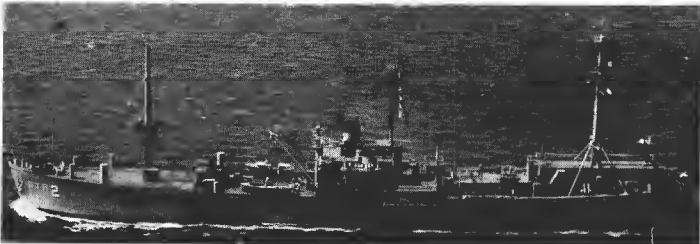
TECHNICAL RESEARCH SHIPS

3 "Liberty" Conversion

OXFORD (ex-Samuel R. Aitken, MCE 3127)	AGTR 1 (ex-AG 159)
GEORGETOWN (ex-SS Robert W. Hart)	AGTR 2 (ex-AG 165)
JAMESTOWN (ex-SS J. Howland Gardner)	AGTR 3 (ex-AG 166)

Measurement, tons	7 330
Dimensions, feet	441.5 oa × 57 × 23
Main engines	Triple expansion; 2 500 ihp = 12.5 knots
Complement	275 (18 officers, 257 men)

Modified "Liberty" ships. *Oxford* began conversion in Sep 1960 by New York Naval Shipyard and commissioned on 8 July 1961. For research and experiments in communications and electromagnetic radiations. Unarmed. *Georgetown* and *Jamestown*, built by New England Shipbuilding Corp in 1945, were converted by Newport News Shipbuilding & Dry Dock Co and commissioned on 9 Nov 1963 and 13 Dec 1963, respectively. All reclassified as AGTR on 1 Apr 1964.



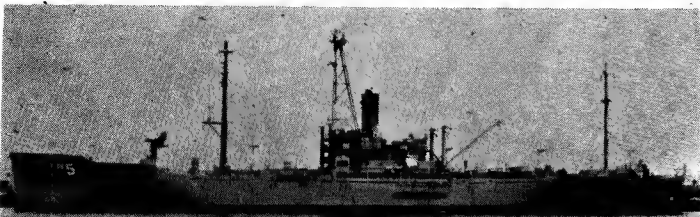
GEORGETOWN 1967, United States Navy, Official

2 "Victory" Conversion

BELMONT (ex-Iran Victory)	AGTR 4 (ex-AG 167)
LIBERTY (ex-Simmons Victory)	AGTR 5 (ex-AG 168)

Displacement, tons	7 190 light; 10 680 full load
Dimensions, feet	455 oa × 62 × 24
Main engines	Turbine; 8 500 shp = 18 knots
Complement	280

Modified "Victory" ships. Conversion completed by Williamette Iron & Steel, Portland, Ore, in Sep and Dec, commissioned 2 Nov and 30 Dec 1964, respectively. Mobile bases for research in communications and electromagnetic radiation.



LIBERTY 1966, courtesy J. A. P. Albornoz

SURVEY SHIPS (AGS)

2 New Construction

AGS 29	AGS 32
Displacement, tons	4 200 full load
Dimensions, feet	393.2 oa x 54 x 16 max
Main engines	2 diesels, 3600 bhp, 1 shaft = 15 knots
Radius, miles	15 000 at 12 knots
Complement	272 (19 officers, 245 men, 8 civilian technicians)

Designed for complete military hydrographic and oceanographic surveys, as tender for coastal survey craft, helicopters, and Marine Corps survey teams, and for compiling and printing finished charts on the spot to meet Fleet and landing force requirements. Equipped with helicopter platform. Capable of self-support on operations for extended periods. AGS 29 in FY 1965 programme. AGS 32 in 1966. Building in UK by Fairfield, Glasgow. AGS 33, 34 authorised 1967.

SILAS BENT T-AGS 26	KANE T-AGS 27
Displacement, tons	1 935 standard; 2 558 full load
Measurement, tons	2 700 gross
Dimensions, feet	261.2 pp; 285 oa x 48 x 15
Main engines	Diesel-electric; 1 shaft; 3 600 hp = 15 knots
Radius, miles	12 000 at 12 knots
Complement	79 (12 officers, 29 men, 38 scientists)

Silas Bent was the first of this type of survey ship built for the Navy. Designed and equipped for hydrographic surveys and to collect special oceanographic, acoustic and meteorological data. Planned as a follow ship to the AGOR type, but the oceanographic research spaces are adapted for hydrographic surveys. Built by the American Shipbuilding Co. Laid down on 2 Mar 1964, launched 16 May 1964 for completion in July 1965. *Kane* was laid down on 19 Dec 1964, launched on 20 Nov 1965 and completed at Boston, Mass in Apr 1967 by Christy Corp. Single screw propulsion with bridge control. 350 hp retractable bow propulsion unit to maintain heading when dead in water. Auxiliary propulsion for quick operation while maintaining steerageway. Fitted with anti-roll tanks. USNS/MSTS.

KELLAR T-AGS 25	S. P. LEE T-AGS 31
Displacement, tons	1 200 standard; 1 400 full load
Dimensions, feet	191.5 wl; 209 oa x 39 x 15
Main engines	Diesel-electric; 1 shaft; 1 200 shp = 15 knots
Complement	41 (9 officers, 17 men, 15 scientists)

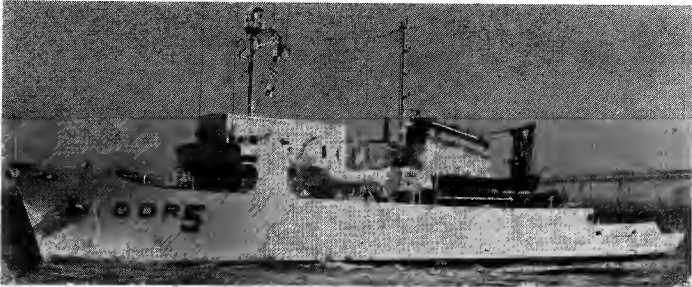
Kellar, prototype authorised in 1962, is the first new construction survey ship built for the US Navy. Civilian manned and operated under the technical control of the Hydrographer. Laid down on 20 Nov 1962, launched on 30 July 1964, completed by 8oland Machine Mfg Co New Orleans. AGS 31, authorised in the 1965 programme was laid down by Defoe SB Co on 27 June 1966. Single screw propulsion with bridge control. Rotatable bow propulsion unit to maintain heading of ship when dead in water.

9 + 2 Oceanographic Research Type

ROBERT D. CONRAD	AGOR 3	LYNCH	AGOR 7
JAMES M. GILLISS	AGOR 4	THOMAS G. THOMPSON	AGOR 9
CHARLES H. DAVIS	AGOR 5	THOMAS WASHINGTON	AGOR 10
SANDS	AGOR 6	DE STEIGUER	AGOR 12
		BARTLETT	AGOR 13

Displacement, tons	1 200 standard; 1 380 full load
Dimensions, feet	191.5 wl; 209 oa x 37.3 x 15
Main engines	Diesel-electric; 1 shaft; 10 000 hp = 13.5 knots
Complement	8 officers, 16 men, 15 scientists (MSTS civilian crew)

AGOR 3 to 13 were launched in 1962-66. For detailed dates and builders see 1966-67 edition. All equipped to study sound transmission, effect of the ocean on scientific and naval instruments, and obtain information on installation and improving ocean surveillance systems. Designed for high manoeuvrability at low speeds. Fitted with laboratories and meteorological rocket launching gear, 80w propeller, 175 hp bow propulsion unit. 1 300 tons gross measurement. *Robert D. Conrad* is on loan to Lamont Laboratory, *Thomas G. Thompson* to University of Washington, *Thomas Washington* to Scripps Inst. of Oceanography. AGOR 14, 15 will be of a new class for operation Scripps and Woods Hole Institutes respectively in 1968. AGOR 16 in FY 1967 Programme.



CHARLES H. DAVIS 1964, United States Navy, Official

3 Ballistic Missile Support Type

BOWDITCH (ex-SS South Bend Victory)	T-AGS 21
DUTTON (ex-SS Tuskegee Victory)	T-AGS 22
MICHELSON (ex-SS Joliet Victory)	T-AGS 23

"Victory" hulls converted in support of the Fleet Ballistic Missile Programme, *Dutton* and *Michelson* at Philadelphia Naval Shipyard 8 Nov 1957 to 16 Nov 1958 and 1 Mar 1958 to 31 Dec 1958, respectively, and *Bowditch* at Charleston Naval Shipyard 10 Oct 1957 to 30 Sep 1958. Operated by MSTS with civilian crew. Designed to chart the ocean floor and to record magnetic fields and gravity to enable vessels to establish locations within a few yards of their actual positions. A photograph of *Dutton* appears in the 1960-61 to 1963-64 editions, and of *Michelson* in the 1964-65 and 1965-66 editions.

JOSIAH WILLARD GIBBS (ex-San Carlos, AVP 51)	T-AGOR 1
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Displacement, tons	1 750 standard; 2 800 full load
Dimensions, feet	300 wl; 310.8 oa x 41.2 x 13.5
Main engines	2 Fairbanks-Morse diesels; 2 shafts; 6 080 shp = 18 knots
Complement	76 (48 crew, 28 scientists)

Former seaplane tender converted for oceanographic research. Built by Lake Washington Shipyard, Houghton, Wash. Laid down on 7 Sep 1942, launched on 20 Dec 1942, and completed on 21 Mar 1944. Assigned to Columbia University-Hudson Laboratories by ONR in 1959, and operated by MSTS. Equipped with a 3rd auxiliary propeller for speeds of 4 knots and less. Photographs appear in the 1959-60 to 1965-66 editions.

MAURY (ex-Renate, AK 36)	AGS-16	TANNER (ex-Pamina, AK 34)	AGS 15
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Displacement, tons	4 203 standard; 6 500 full load
Dimensions, feet	400 wl; 426 oa x 58 x 17
Main engines	Westinghouse turbo-electric; 2 shafts; 6 000 bhp = 17 knots
Boilers	2 Wickes

Former Attack Cargo Ships. S4-SE2-B1 type. 80th built by Walsh-Kaiser Co Inc, Providence, RI. Launched on 31 Jan and 5 Jan 1945, respectively. Converted in 1946. Helicopter flight deck on stern. Accommodation for 35 officers, 666 men. Guns (8-40 mm AA) removed. A photograph of *Maury* appears in the 1954-55 to 1966-67 editions.

REHOBOTH (ex-AVP 50)	AGS 50	SAN PABLO (ex-AVP 30)	AGS 30
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Displacement, tons	1 766 standard; 2 800 full load
Dimensions, feet	300 wl; 310.8 oa x 41.2 x 13.5
Main engines	Fairbanks-Morse diesels; 2 shafts; 5 120 shp = 18 knots
Complement	169 (12 officers, 157 men)

Former Seaplane Tenders. Reclassified as AGS and assigned to duties as deep-sea hydrographic surveying ships under the technical control of the Hydrographer. Built by Lake Washington Shipyard and Associated Shipbuilding, respectively. Launched on 8 Nov and 31 Mar 1942. Guns were removed in 1957.

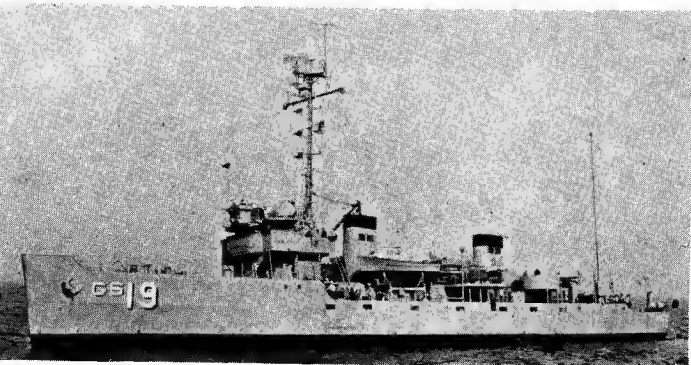


SAN PABLO 1965, United States Navy, Official

SHELDRAKE (ex-AM 62)	AGS 19	TOWHEE (ex-AM 388)	AGS 28
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Displacement, tons	890 standard; 1 250 full load
Dimensions, feet	215 wl; 221.2 oa x 32.2 x 10.8
Main engines	Diesel-electric; 2 shafts; 2 000-3 450 shp = 15 knots
Complement	100

Former Fleet Minesweepers. Built by Gen Eng & DD Co, Alameda, Calif and American SB Co, Cleveland, Ohio respectively. Launched on 12 Feb 1942 and 6 Jan 1945. Reclassified as surveying vessels, *Sheldrake* early in 1952 and *Towhee* on 1 Apr 1964. Sister ship *Pursuit* AGS 17 (ex-AM 108) disposed of in 1960, *Prevail* AGS 20 (ex-AM 107) on 10 Jan 1964 and *Requisite* AGS 18 (ex-AM 109) on 1 Apr 1964.



SHELDRAKE 1965, United States Navy, Official

LITTLEHALES (ex-YF 854)	AGSC 15
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Former covered lighter launched in Aug 1945, converted and reclassified as a coastal survey ship on 14 Feb 1959 and renamed. Standard 300 tons (650 tons full load); 137 oa x 31 x 9 feet, diesel reduction; 2 shafts; 1 000 shp; crew 11.

SERRANO (ex-ATF 112)	AGS 24
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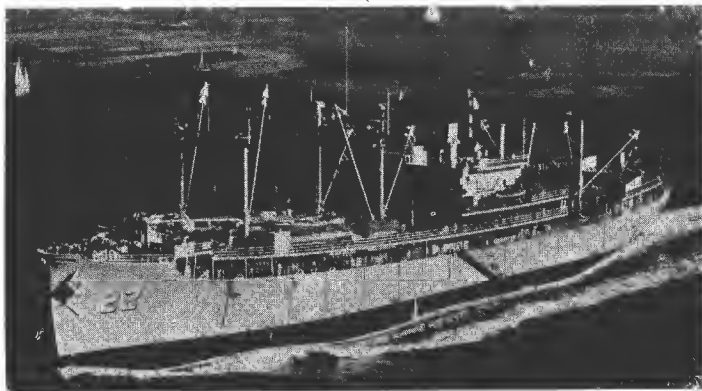
Former fleet ocean tug of the "Apache" class, launched in July 1943, reclassified from ATF to AGS on 15 June 1960. Standard 1 240 tons (1,640 tons full load), 205 oa x 39 x 17 feet, diesel-electric, 1 shaft, 3 000 shp, crew 116.

REPAIR SHIPS (AR)

KLONDIKE ex-AD 22 (12 Aug 1944) AR 22

Displacement, tons B 165 standard; 16 635 full load
Dimensions, feet 465 wl; 492 oa x 69.5 x 27.2
Guns 1—5 in; 4—3 in; 4—40 mm AA
Main engines Geared turbines; 8 500 shp = 18.4 knots
Boilers 2 Babcock & Wilcox
Complement Accommodation for B26

Sister ship of "Arcadia" class destroyer tenders (see previous page), reclassified as a repair ship on 20 Feb 1960 and designation changed from AD 22 to AR 22.



KLONDIKE 1962, United States Navy, Official

2 "Amphion" Class

AMPHION (15 May 1945) AR 13

CADMUS (5 Aug 1945) AR 14

Displacement, tons 7 826 standard; 14 490 full load
Dimensions, feet 456 wl; 492 oa x 70 x 27.5
Guns 1—5 in; 8—40 mm AA
Main engines Westinghouse turbines; 8 500 shp = 17 knots
Boilers 2 Foster-Wheeler
Complement Accommodation for 921

Built by Tampa Shipbuilding Co. Launch dates above. C 3 cargo type.



CADMUS 1966, A. & J. Pavia

TUTUILA (ex-Arthur P. Gorman, 12 Sep 1943) ARG 4

Displacement, tons 5 766 standard; 14 350 full load
Dimensions, feet 416 wl; 441.5 oa x 57 x 23 mean
Guns 3—3 in, 50 cal. single
Main engines Triple expansion; 2 500 ihp = 12.5 knots
Boilers 2 Babcock & Wilcox

Liberty ship. "EC 2" type. Built by Bethlehem Steel Co, Fairfield Yard, Baltimore, Md. Internal Combustion Engine Repair Ship, Hooper Island ARG 17 was stricken in 1959, Kermit Roosevelt ARG 16 and Luzon ARG 2 in 1960. Xanthus AR 19 in 1962. Chouire ARV 1, Dionysus AR 21, Culebra Island ARG 7, Laertes AR 20, Mindanao ARG 3, and Samar ARG 11 on 1 Sep 1961. Cebu ARG 6, Mona Island ARG 9, and Webster ARV 2 in Sep 1962. Oahu ARG 5 and Palawan ARG 10 in July 1963.

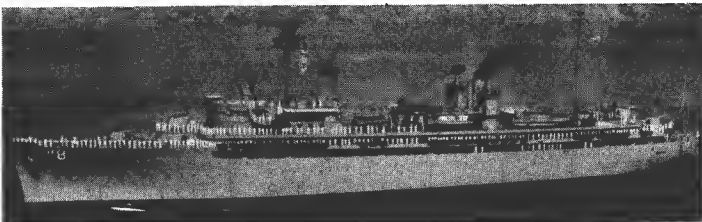
4 "Vulcan" Class

AJAX (22 Aug 1942) AR 6
HECTOR (11 Nov 1942) AR 7

JASON (3 Apr 1943) AR 8
VULCAN (14 Dec 1940) AR 5

Displacement, tons 9 140 standard; 16 200 full load
Dimensions, feet 520 wl; 529.3 oa x 73.3 x 23.3
Guns 4—5 in
Main engines Geared turbines; 2 shafts; 11 000 shp = 19.2 knots
Boilers 4 Babcock & Wilcox 3-drum
Complement 950

Vulcan was built by New York SB Corpn under the 1959 Programme and the other three by Los Angeles SB & DD Corpn under the 1940 Programme. All carry a most elaborate equipment of machine tools to undertake repairs of every description. Jason, formerly ARH 1, and rated as heavy hull repair ship, was reclassified AR 8 on 9 Sep 1957. AA guns (8—40 mm) removed. A photograph of Ajax appears in the 1955-56 to 1966-67 editions.



JASON 1967, United States Navy, Official

MARKAB (ex-AD 21, ex-AK 31, ex-Mormacpenn) AR 23

Displacement, tons 8 560 standard; 14 800 full load
Dimensions, feet 465 pp; 492.5 oa x 69.8 x 24.8
Guns 4—3 in; 50 cal single
Main engines Geared turbines; B 500 shp = 18.4 knots
Boilers 2 Foster-Wheeler

Built by Ingalls SB Co, Pascagoula, Mass. Launched on 21 Dec 1940. Former destroyer tender, reclassified as repair ship on 15 Apr 1960 and designation changed from AD to AR. The 5 inch and 4—40 mm guns were removed.



MARKAB (es repair ship) 1961, United States Navy, Official

BRIAREUS (ex-Hawaiian Planter) AR 12 DELTA (ex-AK 29 ex-Hawaiian Packer) AR 9

Displacement, tons 8 975 standard; 14 500 full load
Dimensions, feet 465.5 pp; 490.5 oa x 69.5 x 24.3
Guns 4—3 in
Main engines Geared turbines; 8 500 shp = 17 knots
Boilers 2 Foster-Wheeler and 2 Babcock & Wilcox, respectively

Both launched in 1941. C 3 type. The 5 inch and 4—40 mm guns were removed.



DELTA 1961, United States Navy, Official

ACHELOUS (ex-LST 10)	ARL 1	INDRA (ex-LST 1147)	ARL 37
AMYCUS (ex-LST 489)	ARL 2	KRISHNA (ex-LST 1149)	ARL 38
ASKARI (ex-LST 1131)	ARL 30	MEGARA (ex-LST 1095)	ARVA 6
ATLAS (ex-LST 231)	ARL 7	MIDAS (ex-LST 524)	ARB 5
BELLEROPHON (ex-LST 1132)	ARL 31	PANDEMUS (ex-LST 650)	ARL 18
CHLORIS (ex-LST 1094)	ARVE 4	SARPEDON (ex-LST 956)	ARB 7
EGERIA (ex-LST 136)	ARL 8	SATYR (ex-LST 852)	ARL 23
ENDYMION (ex-LST 513)	ARL 9	SPHINX (ex-LST 963)	ARL 24
FABIUS (ex-LST 1093)	ARVA 5	TELAMON (ex-LST 957)	ARB 8
		ZEUS (ex-LST 132)	ARB 4

Displacement, tons 1 625 light; 4 100 full load
Dimensions, feet 316 wl; 328 oa x 50 x 11
Guns 8—40 mm AA
Main engines GM diesels; 2 shafts; 1 800 bhp = 11.6 knots

All launched in 1942-45. Repair Ships for Battle Damage (ARB), for Landing Craft (ARL), for Aircraft Engines (ARVE), and Airframes (ARVA). Complement 251 to 286. Photograph of Megara in 1960-61 to 1966-67 editions.

TRANSFERS. Agenor ARL 3 (ex-LST 490) to France on 2 Mar 1951, Patroclus ARL 19 (ex-LST 955) to Turkey in 1952, Minotaur ARL 15 (ex-LST 645) to Korea on 3 Oct 1955, Romulus ARL 22, to Philippines in 1961, Diomedes ARB 11 and Ulysses ARB 9, to West Germany in June 1961, Gordius ARL 36 to Iran in Sep. 1961, Hellas ARB 12 to Brazil in Jan 1962, Quirinus ARL 39 (ex-LST 1151) to Venezuela in June 1962, Aventinus ARVE 3 (ex-LST 1092) to Chile in 1963.

DISPOSALS Demeter ARB 10 (ex-LST 1121), was stricken from the list on 1 Mar 1959, Adonis ARL 4, Daedalus ARL 35, Minos ARL 14, Pentheus ARL 20 and Proserpine ARL 21, Crean ARL 11, Menelaus ARL 13, Myrmidon ARL 16, Numitar ARL 17, Stentor ARL 26 and Typhoon ARL 28 in 1960, Amphitrite ARL 29, Aristaues ARB 1, Chimaera ARL 33, Caronis ARL 10, Oceanus ARB 2, Phoon ARB 3, and Poseidon ARL 12 on 1 July 1961.



PANDEMUS 1967, United States Navy, Official

MISSILE RANGE SHIPS

8 Missile Range Ships. "Victory" Type

RANGE TRACKER (ex-T-AG 160, ex-SS *Skidmore Victory*, MCV 685) T-AGM 1
LONGVIEW (ex-Haiti Victory, T-AK 238) T-AGM 3
RICHFIELD (ex-Private Joe E. Mann, T-AK 253, ex-Owensboro Victory) T-AGM 4
SUNNYVALE (ex-Dalton Victory T-AK 256) T-AGM 5
WATERTOWN (ex-SS *Niantic Victory*) T-AGM 6
HUNTSVILLE (ex-SS *Knox Victory*) T-AGM 7
WHEELING (ex-Saton Hall Victory) T-AGM 8
TWIN FALLS (ex-Twin Falls Victory) T-AGM 11

Displacement, tons 7 190 Navy light; 10 680 full load
 Dimensions, feet 455 oa x 62 x 24 max
 Main engines Geared turbines; 8 500 shp = 18 knots
 Complement 90

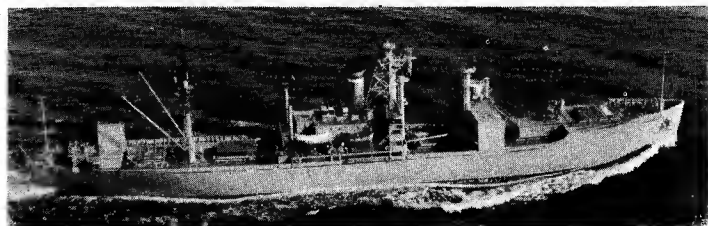
T-AGM 1—The 9 000-ton conversion of *Skidmore Victory* to a missile range instrumentation ship, was authorised in the Fiscal Year 1960 Conversion Programme. Converted by Ingalls Shipbuilding Corp and assigned to the Pacific Missile Range as *Range Tracker*. Fitted with telemetry, navigation, timing, aerology, radio command and surveillance equipment. MSTS civil service crew of 17 officers, 42 men and 30 civilian electronic specialists.

T-AGM 3 and T-AGM 5—*Dalton Victory* and *Haiti Victory* (both USNS) were specially equipped to recover satellite capsules or missiles in the Pacific Missile Range, and are fitted with a helicopter deck and hangar for two helicopters, radar plotting equipment, weather sounding devices, and telemetry receivers. The two ships were reclassified and renamed in 1960. Based at Honolulu, Hawaii.

T-AGM 4—*Private Joe E. Mann* was fitted out as range instrumentation and telemetry ships for the Pacific Missile Range in Oct 1958. Based at Pt Mugu, California; as tracking and recovery ship. Reclassified and renamed in 1960.

T-AGM 6 and T-AGM 7—Acquired, reclassified and renamed in 1960-61. Converted in 1965 by Avondale Shipyard, Westwego, La. Re-entry ships for Apollo Programme. T-AGM 8—(VC 2 conversion) converted under the Fiscal Year 1962 programme, by Boland Machinery & Manufacturing Co. Placed in service on 28 May 1964. Painted white. Complement: 57 crew, 15 Navy personnel, 34 technicians.

T-AGM 11—VC2-S-AP3 Type. Similar to Missile Range Ships transferred between Pacific and Atlantic.



RANGE TRACKER 1962, United States Navy, Official



HUNTSVILLE 1967, United States Navy, Official

1 Missile Range Telemetry Ship. Small Type

RANGE RECOVERER (ex-T-AG 161, ex-FS 278) T-AGM 2
 Acquired from the Army in 1960. Instrumentation and telemetry ship for the Pacific Missile Range. MSTS Civil Service crew. Reclassified from T-AG 161 to T-AGM 2 in 1960. AKL type. Displacement 550 tons, length 176 feet, crew 21.

8 Missile Range (ex-USAF) Ships

GENERAL H. H. ARNOLD (ex-USNS *General R. E. Collan*, T-AP 139) T-AGM 9
GENERAL HOYT S. VANDENBERG (ex-USNS *General Harry Taylor*, T-AP 145) T-AGM 10

Conversions of C4-S-A3 hulls for monitoring missile and satellite tests. They have elaborate electronic installations. The ship control spaces have been shifted aft and the forward superstructure has been removed to accommodate the numerous antennae. Among these is a telemetering antenna 60 feet in diameter, a command control antenna and a high powered precise tracking radar antenna specially located in order to minimise danger from the radiation it generates. These ships were converted in 1962-63 by the Bethlehem Steel Co, Brooklyn and Hoboken Yards with Sperry Rand Corp as the prime contractor for the conversions. Full load displacement: 16 600 tons, length 532 feet, speed 17 knots. *General Hoyt S. Vandenberg* was christened at Baltimore, on 18 July 1963 as a US Air Force Ship, but both ships and the eight following ships, all designated Atlantic Missile Range Ships, were transferred from the Air Force to the Navy (MSTS) in 1964 and designated USNS, with civilian crews.

SWORD KNOT T-AGM 13
ROSE KNOT T-AGM 14
COASTAL SENTRY T-AGM 15
 (ex-Somerset AK 212)

All former merchant ships, CI-M-AVI type, diesel powered, of the same type as the Coast Guard's *Kukui* and USNS T-AG 169, 170, 171 and T-APC 116. Eventually there will be 12 ships equipped for telemetry and 8 ships for telemetry data acquisition only.

VANGUARD (ex-Mussle Shoals, ex-Mission *San Fernando*, T-AO 122) T-AGM 19
REDSTONE (ex-Johnstown, ex-Mission *de Pala*, T-AO 114) T-AGM 20
MERCURY (ex-Flagstaff, ex-Mission *San Juan*, T-AO 126) T-AGM 21

Former T2-SE-A2 fleet tankers. Reacquired from the Maritime Administration reserve fleet in Sep 1964 and renamed on 8 Apr 1965. Converted by General Dynamics Corp, Quincy, Mass for completion in Dec 1965, June 1966 and Sep 1966, respectively, for Project Apollo use by 1968. Lengthened with new 72-ft mid-section from 523 to 595 feet. Beam increased by 7 ft to 75 ft. Displacement 21 626 tons. Three computers and tracking, telemetry, ship to shore and ship to space equipment. Crew 44 plus 108 scientists and technicians.

DISPOSAL
American Mariner T-AGM 12, was expended as a target in Chesapeake Bay in Oct 1966 (explosive scuttling).

MISSILE EXPERIMENTAL SHIPS

1 Experimental Navigational Ship

COMPASS ISLAND (ex-YAG 56, ex-SS *Garden Mariner*) EAG 153

Displacement, tons 16 076 full load
 Measurement, tons 17 600
 Dimensions, feet 529.5 pp; 563 oa x 76.2 x 29
 Main engines GE geared turbines; 19 250 shp = 20 knots

Built by New York Shipbuilding Corp, Camden, New Jersey. Converted by New York Naval Shipyard, Brooklyn, and commissioned on 3 Dec 1956 for the development of the Fleet Ballistic Missile guidance and ship navigation systems. Her mission is to assist in the development and evaluation of a navigation system independent of shore-based aids. (See *Navigation* notes on SINS, Ship Inertial Navigational System, in the 1957-58 to 1963-64 editions). The ship was acquired by the Navy from the Maritime Administration. She was modernised to provide excellent living spaces for her crew and accommodation for a large number of scientists to work and live aboard. **STABILIZATION.** One of the most comfortable riding ships in the Navy. She has the best automatic steering available, and has activated fins for roll stabilization. This system was developed by Sperry Gyroscope Co. When her sister ships roll 15 degrees, *Compass Island*, in the same seaway rolls about 1.5 degrees, a 90 per cent reduction in roll.

PHOTOGRAPHS. A large starboard broadside aerial view of *Compass Island* appears in the 1958-59 and 1959-60 editions, a large starboard quarter oblique aerial view in the 1957-58 edition, and a starboard bow oblique aerial view in the 1960-61 to 1966-67 editions.

1 Experimental Firing Ship

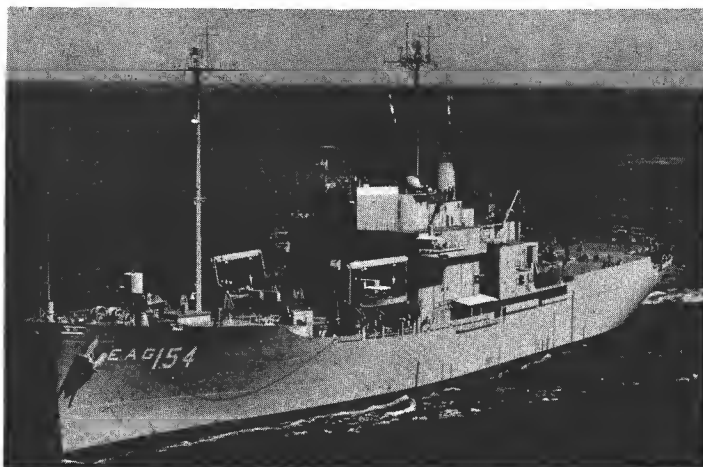
OBSERVATION ISLAND (ex-YAG 57, ex-SS *Empire State Mariner*) EAG 154

Displacement, tons 17 600 full load
 Measurement, tons 15 000
 Dimensions, feet 529.5 wl; 563 oa x 76.2 x 29
 Main engines GE geared turbines; 19 250 shp = 20 knots
 Complement 350

Built by New York Shipbuilding Corp, Camden, New Jersey. Converted by Norfolk Naval Shipyard, Portsmouth, Virginia. Commissioned on 5 Dec 1958. Experimental vessel for firing "Polaris" (intermediate range inter-continental ballistic missile) and other F8M type missiles and testing systems. Conversion cost \$20 000 000.

MISSILE TESTING. The ship is fitted for complete missile testing, fuellings, servicing and firing, with equipment to evaluate Polaris missiles for launching from surface ships. A new launching tube was installed at Norfolk Naval Shipyard in 1960 to replace one of two tubes formerly installed. The new tube is fitted at a fixed angle. A tiltable tube remains but a vertically fixed tube has been replaced. Both of these were submarine missile launching experiments. Eight to ten different submarine designs and several surface ship designs are being developed, for carrying "Polaris". She carries two "Polaris" missile launchers. She fired the first ship launched Polaris missile, at sea on 27 Aug 1959. The 28-foot test version of the Polaris was forced 70 feet above the deck by compressed air after which its first stage engine ignited. The ship is installed with complex navigational equipment designed to pinpoint long range surface-to-surface missile firings. She was fitted with the second "Polaris" missile launching tube in Sep 1959 at Norfolk Naval Shipyard. It is understood, however, that surface firing of Polaris is no longer a serious study.

PHOTOGRAPHS. A large starboard bow surface view of *Observation Island* appears in the 1959-60 edition, and a port bow oblique aerial view in the 1960-61 to 1966-67 editions.



OBSERVATION ISLAND 1967, United States Navy, Official



VANGUARD

TRANSPORTS

3 "Barrett" Class

BARRETT (ex-President Jackson)	T-AP 196
GEIGER (ex-President Adams)	T-AP 197
UPSHUR (ex-President Hayes)	T-AP 198
Displacement, tons	17 600 standard, 19 600 full load
Measurement, tons	12 660 gross, 10 600 deadweight
Dimensions, feet	500 pp; 533 oa × 73 × 27
Main engines	Geared turbines; 1 shaft; 13 750 shp = 19 to 20 knots (cruising), see <i>Engineering</i>
Troops	1 900 (400 officers, 1 500 men)

Maritime Administration type P2-S1-DNI. All three were built by the New York Shipbuilding Corporation, New Jersey. Originally laid down as passenger ships for the American President Lines but taken over by the Navy to be completed as troop transports, and were all assigned to the Military Sea Transportation Service as US Naval Ships (non-commissioned naval vessels). Troop carrying capacity of 1 500 plus 396 cabin berths for officers and dependants. Troop lift can be increased by at least 1 000 men if necessary by converting recreation areas into berthing spaces. All spaces, compartments and holds are air-conditioned except the engine room and bridge.

ENGINEERING. On sea trials *Barrett* attained a speed of 21.5 knots at full power, 1.5 knots more than expected by engineers on the basis of shaft horse power developed.

PHOTOGRAPHS. A port bow aerial view of *Geiger* appears in the 1960-61 to 1963-64 editions and a port broadside surface view of *Barrett* in the 1964-65 to 1966-67 editions.

Name	Laid down	Launched	Completed
<i>Barrett</i>	1 June 1949	27 June 1950	15 Dec 1951
<i>Geiger</i>	1 Aug 1949	9 Oct 1950	13 Sep 1952
<i>Upshur</i>	30 Sep 1949	19 Jan 1951	20 Dec 1952



UPSHUR

1967, Skyfotos

3 P-2 "General" Class

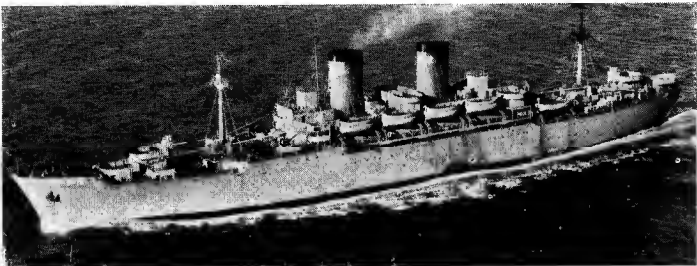
GENERAL JOHN POPE (21 Mar 1945)	T-AP 110
GENERAL W. H. GORDON (7 May 1944)	T-AP 117
GENERAL WILLIAM WEIGEL (3 Sep 1944)	T-AP 119
Displacement, tons	11 828 standard; 20 175 full load
Dimensions, feet	573 wl; 622.5 oa × 75.5 × 25.5 max
Main engines	De Laval geared turbines; 2 shafts; 17 000 shp = 20.6 knots
Boilers	4 Foster-Wheeler; 465 psi
Troops	5 240 (320 officers, 4 920 men) capacity
Complement	476 (43 officers, 433 men) total accommodation

All built by Federal SB & DD Co at Kearny. *General W. H. Gordon*, was reacquired from the Maritime Administration, returned to the Navy, and assigned to the MSTs in 1961, being manned by a civil service crew. The three ships manned by Navy crews, were transferred to the Maritime Administration in 1965 and 1966, see *Transfers* below. They were replaced by *General John Pope*, *General William Weigel* (see above) and *General Nelson M. Walker* (see top of col 2) manned by civil service crews.

PHOTOGRAPHS. A port bow oblique aerial view of *General William Mitchell* appears in the 1960-61 to 1963-64 editions.

TRANSFERS. *General A. E. Anderson*, AP 111, *General John Pope* AP 110, *General M. C. Meigs* AP 116, and *General William Weigel* AP 119, were transferred to the Maritime Administration Reserve Fleet in 1958; but *General John Pope* and *General William Weigel* were reacquired by the Navy in 1965 and designated USNS. *General H. W. Butner* T-AP 113, was transferred to the Maritime Administration in May 1961, *General G. M. Randall* T-AP 115, in Sep 1962, *General J. C. Breckinbridge* T-AP 176, and *General W. A. Mann* T-AP 112 in 1965 and *General William Mitchell* T-AP 114, in 1966.

MILITARY SEA TRANSPORTATION SERVICE. On 1 Oct 1949 the US Navy's Military Sea Transportation Service took over Naval and Army Transport Services. Non-commissioned ships of the Military Sea Transportation Service (US Naval Ships), Transports. Cargo Ships and Tankers are identified by a blue and gold band on their funnels, with names painted on each bow and stern prefixed with the letters USNS. In other respects they are painted like US Navy Ships. "T" prefixed to designations indicates assignment to MSTs.



GENERAL W. H. GORDON

1964, Skyfotos

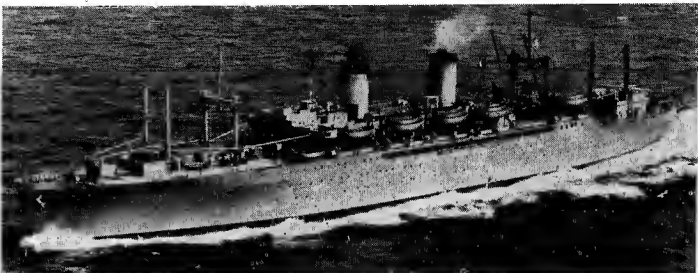
8 "Admiral" Class

GENERAL DANIEL I. SULTAN (ex-Admiral W. S. Benson)	T-AP 120
GENERAL HUGH J. GAFFEY (ex-Admiral W. L. Capps)	T-AP 121
GENERAL ALEXANDER M. PATCH (ex-Admiral R. E. Coontz)	T-AP 122
GENERAL SIMON B. BUCKNER (ex-Admiral E. W. Eberle)	T-AP 123
GENERAL EDWIN D. PARTICK (ex-Admiral C. F. Hughes)	T-AP 124
GENERAL NELSON M. WALKER (ex-Admiral H. T. Mayo)	T-AP 125
GENERAL MAURICE ROSE (ex-Admiral Hugh Rodman)	T-AP 126
GENERAL WILLIAM O. DARBY (ex-Admiral W. S. Sims)	T-AP 127

Displacement, tons	9 676 standard; 20 120 full load
Dimensions, feet	609 oa × 75.5 × 26.5 (29 max)
Main engines	2 GE Turbo-electric; 2 shafts; 18 000 shp = 19 knots
Boilers	4 Combustion Engineering "D" type
Complement	367 (37 officers, 330 men) total accommodation
Troops	4 680 (280 officers, 4 400 men) capacity

MC Type P 2-SE2-R1. Ex-"Admiral" Class. All built by Bethlehem-Alameda in 1944-45. T-AP 125 *General Nelson M. Walker* (ex-Admiral H. T. Mayo) was transferred to the Maritime Administration in 1958, but was reacquired by the Navy as a result of the Lebanon landings in July 1958. She was stricken from the "List of Naval Vessels" on 20 Jan 1959, and transferred to the Maritime Administration as excess to MSTs requirements, but was reacquired from Maritime Administration in Sep 1965, assigned to MSTs and designated USNS.

PHOTOGRAPHS. A port bow oblique aerial view of *General Simon B. Buckner* appears in the 1960-61 to 1963-64 editions, a large port bow oblique aerial view of *General Maurice Rose* in the 1952-53 to 1959-60 editions, and a larger starboard bow surface view of *General Alexander M. Patch* in the 1950-51 and 1951-52 editions.



GENERAL ALEXANDER M. PATCH

1964, Skyfotos

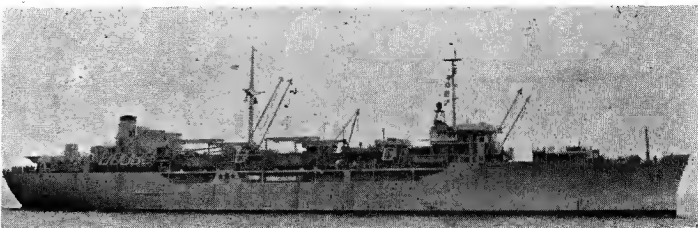
2 "General" Class

GENERAL R. M. BLATCHFORD 153	GENERAL LE ROY ELTINGE 154
Displacement, tons	10 034 standard; 17 250 full load
Dimensions, feet	523 oa × 71.5 × 26.5 max
Main engines	Westinghouse turbine; 9 000 shp = 16.5 knots
Boilers	2 Babcock & Wilcox
Complement	256 (32 officers, 224 men) total accommodation
Troops	3 823 (22B officers, 3 595 men) capacity

Type C4-S-A 1. Built by Kaiser Co, Richmond, California, in 1943-44. Carry 1 500 to 3 000 troops. T-AP 146, 148, 157, 159 were laid up in the Navy's Reserve Fleet in 1954. T-AP 135 and 155 were stricken from the Navy List and transferred to the Maritime Administration in 1956. T-AP 134, 137, 13B, 139, 140, 143, 144, 145, 150, 151, 156 and 15B were transferred to the Maritime Administration in 1958 as excess to MSTs requirements (T-AP 134, 137, 143 and 145 were stricken in 1959). Of the remaining ten, T-AP 153 and 154 are in the MSTs. *General A. W. Greely* 141, *General C. H. Muir* 142, *General W. F. Hase* 146, *General E. T. Collins* 147, *General M. L. Hersey*, 148, *General I. M. McRae* 149, *General C. C. Ballou* 157, and *General Stuart Heintzelman* 159 were transferred to the Maritime Administration in 1960. All these transferred MA ships are converting to merchant ships in 1967 after transfer to private owners.

PHOTOGRAPHS. A port bow oblique aerial view of *General Le Roy Eltinge* appears in the 1961-62 to 1966-67 editions.

TRANSFERS. *Fredrick Funston* T-AP 17B, *James O'Hara* T-AP 179, *David C. Shanks* T-AP 180, *Fred C. Ainsworth* T-AP 181, *George W. Goethals* T-AP 182, and *Henry Gibbins* T-AP 183, were transferred to the Maritime Administration in 1960, as excess to Military Sea Transportation Service requirements. (*Henry Gibbins* was turned over to the New York Maritime College at Fort Schuyler as a training vessel on a loan basis) T-AP 186 *Sergeant Charles E. Mower*, was transferred in 1960 to the Maritime Administration in excess to MSTs needs. Sister ship T-AP 185 *Private William H. Thomas* (ex-Rixey) and T-AP 184 *Private Eldon H. Johnson* (ex-Pinkney) were transferred to the Maritime Administration late in 1957. T-AP 202 *Marine Serpent*, returned to Maritime Administration in 1955. The C4-S-A3 type, T-AP 193 *Marine Adder*, T-AP *Marine Lynx*, T-AP 195 *Marine Phoenix* and T-AP 199 *Marine Carp* transferred to the Maritime Administration in 1958 as excess to MSTs needs. T-AP 184, 185 and 199 were stricken in 1959. All these are converting to merchant ships in 1967.



GENERAL LE ROY ELTINGE

1967

FLEET TACTICAL COMMAND SHIP (AGF)

Former Patrol Seaplane Tender (AVP)

1 Flagship Type

VALCOUR (ex-AVP 55) AGF 1

Displacement, tons 1 766 standard; 2 800 full load
Dimensions, feet 300 wl; 310.8 oa x 41.2 x 13.5
Guns 1—5 in, 38 cal; 8—40 mm (1 quadruple, 2 twin)
Main engines 2 diesels; 2 shafts; 6 080 bhp = 18 knots
Complement 215

Originally rated as Seaplane Tenders, Small, but actually employed more like patrol vessels. *Valcour* was reclassified as AGF 1 on 15 Dec 1965, as Commander Middle East Force Flagship. *Rehoboth* and *San Pablo* were fitted for oceanographical surveying and reclassified AGS 50 and 30 respectively, (see under Survey Ships on earlier page). Other ships of this class have been adapted for various duties.

GUNNERY. Original main armament of 4—5 inch guns was severely reduced to save top weight.

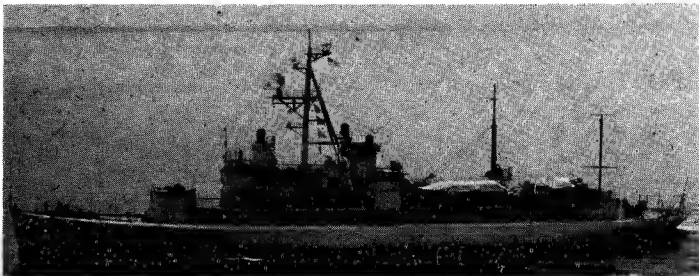
TRANSFERS. *Oyster Bay*, former Motor Torpedo Boat Tender (AVP 28, ex-AGP 6) was transferred to Italy on 23 Oct 1957, and renamed *Pietro Cavezzale*; *Gardiners Bay*, AVP 39 was transferred to the Norwegian Navy on 17 May 1958 and renamed *Haakon VII*. *Orca* AVP 49 was transferred to Ethiopia at the end of 1961 and renamed *Ethiopia*.

WEATHER SHIPS. Of this class, *Abescon*, *Barataria*, *Bering Strait*, *Casco*, *Castle Rock*, *Chinoteague*, *Cook Inlet*, *Coos Bay*, *Half Moon*, *Humboldt*, *Mackinac*, *Matagorda*, *Rockaway*, *Unimak*, *Yakutat*, were loaned to the US Coast Guard for duty as Weather Ships in 1948-49 and stricken from the Navy List and transferred outright to the Coast Guard in Sep 1966.

RECLASSIFICATION. *San Carlos* AVP 41, was reclassified as an Oceanographical Research Vessel and renamed *Josiah Willard Gibbs* AGOR 1, on 15 Dec 1958.

DISPOSALS

Barnegat AVP 10 was stricken from the Navy List on 23 May 1958, (she became Greek MS *Kentavros*; two other ex-AVPs also became Greek merchant ships), *Floyds Bay*, on 1 Mar 1960, and *Onslow* AVP 48, *Shelikof* AVP 52, and *Timbalter* AVP 54 in 1960. *Corson* AVP 37 and *Suisun* AVP 53 were expended as targets of San Diego in Oct 1966. *Duxbury Bay* AVP 38, and *Greenwich Bay* AVP 41, which latterly rotated as Commander Middle East Force Flagships, were stricken from the Navy List on 1 July 1965.



VALCOUR (as AGF 1) 1967, United States Navy, Official

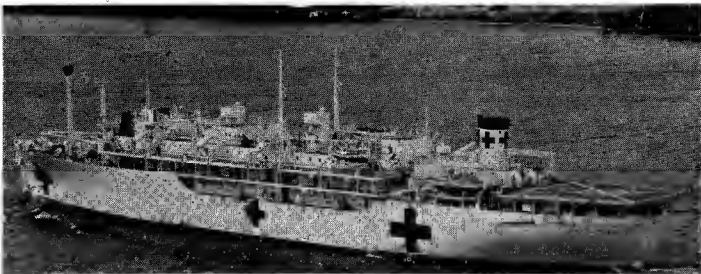
HOSPITAL SHIPS (AH)

2 "Haven" Type

Name	No.	Ex-Name	Launched
REPOSE	AH 16	Marine Beaver	8 Aug 1944
SANCTUARY	AH 17	Marine Owl	15 Aug 1944

Displacement, tons 11 141 standard; 15 400 full load
Dimensions, feet 496 wl; 520 oa x 71.5 x 24
Main engines GE geared turbines; 9 000 shp = 18.3
Boilers 2, Babcock & Wilcox
Complement Accommodation for 626 to 698

Built by the Sun SB & DD Co, Chester, Pa. Maritime Commission C 4-S-B2 Type. Beds for 802 to 922 patients. Air conditioned throughout. *Consolation* was chartered to a private group, operated by American President Lines, as a floating laboratory and medical school in South-East Asia in 1961. She was renamed *Hope* by the People to People Health Foundation Inc. The US Navy signed the charter on 16 Mar 1960. The \$200 000 overhaul was undertaken by the Puget Sound Bridge and Dry Dock Company in 1960. *Benevolence* AH 13 sank after a collision with a freighter off San Francisco in Aug 1950. *Tranquility* AH 14, transferred to the Maritime Administration Reserve Fleet in 1961 and *Haven* AH 12, on 1 Mar 1967. *Repose* AH 16, was in Sep 1962 transferred to Maritime Administration, but was reacquired and recommissioned on 16 Oct 1965 at San Francisco for Pacific service with complement of 54 officers, 29 nurses and 543 men and 922 bed capacity. *Sanctuary*, first commissioned in the US Navy on 20 June 1945 to Aug 1946, was reacquired from Maritime Administration in 1966 and recommissioned on 15 Nov 1966 for Vietnam service. After modernisation by Avondale Shipyard, New Orleans, she has helo platform aft, 750 bed hospital, with 323 staff (24 doctors, 29 nurses, 3 dentists, 258 men) and 375 crew (17 officers, 358 men).



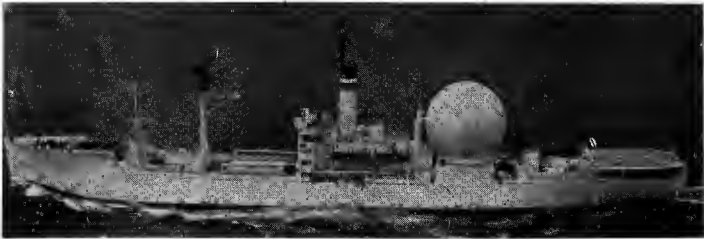
SANCTUARY 1967, United States Navy, Official

SATELLITE COMMUNICATIONS SHIP

1 Ex-AK Type

KINGSPORT (ex-Kingsport Victory, T-239) T-AG 164
Displacement, tons 7 190 light; 10 680 full load
Dimensions, feet 455 oa x 62 x 24 max
Main engines Geared turbines; 1 shaft; 8 500 shp = 17 knots
Complement 60 crew, 38 Navy technicians

Built in 1944 by the California Shipbuilding Corporation, Los Angeles. Former cargo ship in the MSTs fleet. Name shortened, ship reclassified, and converted in 1961-62 by Willamette Iron & Steel Co, Portland, Oregon, into the world's first satellite communications ship, for Project Advent, involving the promotion of a terminal to meet the required military capability for high capacity, world-wide radio communications, using high altitude hovering satellites, and the installation of ship-to-shore communications, facilities, additional electric power generating equipment, a helicopter landing platform, aerological facilities, and a 30-ft parabolic communication antenna housed in a 53-ft diameter plastic radome abaft the superstructure. Painted white for operations in the tropics. Project Advent Syncom satellite relay operations were completed in 1966, and *Kingsport* was reassigned to other duties.



KINGSPORT 1964, United States Navy, Official

DEGAUSSING SHIPS (ADG)

1 Ex-Fleet Minesweeper Type

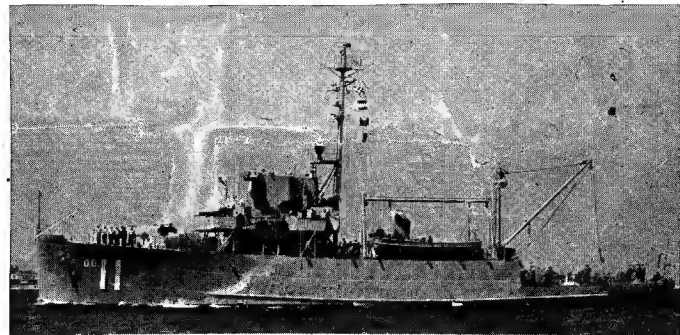
SURFBIRD (ex-MSF 383) ADG 383
Displacement, tons 890 standard; 1 250 full load
Dimensions, feet 215 wl; 221.2 oa x 32.2 x 10.8
Main engines Diesel electric; 2 shafts; 3 532 bhp = 18 knots
Complement 70

Built by American Shipbuilding Co, Lorain, Ohio. Laid down on 15 Feb 1944. Launched on 31 Aug 1944. Completed (first commissioned) on 25 Nov 1944. Former Fleet Minesweeper of the steel-hulled type, MSF (ex-AM), reclassified as ADG on 18 May 1957. Stationed in the Far East.

3 Ex-Escort PCE Type

DEPERM (ex-PCE 883, 14 Jan 1944) ADG 10
LODESTONE (ex-PCE 876, 30 Sep 1943) ADG 8
MAGNET (ex-PCE 879, 1 Sep 1943) ADG 9
Displacement, tons 640 standard; 900 full load
Dimensions, feet 184.5 oa x 33 x 9.5
Main engines Diesel; 2 shafts; 2 400 bhp = 16 knots

Launch dates above. Named on 1 Feb 1955. All out of commission, in reserve, Sister ship *Ampere* ADG 11 (ex-Drake AM 359) was stricken from the Navy List on 1 July 1961.



ADG Type Added 1957, Ted Stone

PATROL CRAFT (YP)

14 + 1 Navigation Training Type

YP 654	YP 656	YP 658	YP 660	YP 662	YP 664	YP 666
YP 655	YP 657	YP 659	YP 661	YP 663	YP 665	YP 667
						YP 668

Displacement, tons. 56 standard; 60 full load
Dimensions, feet 80.0a x 17.6 x 5
Main engines Diesel; 2 shafts; 320 bhp

YP 654-663 were built by Stephen Bros Inc, Stockton, Calif. YP 654-658 under the 1956 Fiscal Year Programme, and YP 659-663 under the 1957 Fiscal Year Programme, All laid down Jan-Nov 1957, launched July 1957-Mar 1958 and completed Mar 1958-Nov 1958. YP 664 and 665 were built by Elizabeth City Shipbuilders, Inc, Elizabeth City, North Carolina, under the 1959 Fiscal Year Programme. Floating classrooms for training midshipmen in seamanship and navigation at the United States Naval Academy. Wooden hull construction with aluminium deck houses. Surface search radar, gyro and magnetic compass, navigational plotting equipment. Potential patrol craft for national emergency. YP 666 and 667 were built by Stephens Bros under the 1965 Fiscal Year Programme. Five other patrol vessels, YP 584, 585, 587, 588, 591, are also used for training at Annapolis. YP 647, 648, 649, 650 and 651 were stricken on 1 Mar 1960, and YP 586, 589 and 590 on 1 Aug 1964. YP 584 and 591 were reinstated in 1966. YP 668 in FY Programme, building by Peterson Boatbuilding Co, Taconia.

AMMUNITION SHIPS (AE)

4 + 2 New Construction

BUTTE AE 27	MOUNT HOOD AE 29
KILAUEA AE 26	SANTA BARBARA AE 28
Displacement, tons	20 500 full load
Dimensions, feet	565 oa x 81
Guns	8—3 in, 50-cal (4 twin)
Main engines	Geared turbines

AE 26, 27 authorised in the 1965 programme. First of a new class of ammunition ships with optimum seaworthiness and a sustained speed of 20 knots. Equipped with FAST. Being built by General Dynamics Corp, Quincy, at a cost of \$45 623 162. *Kilauea* was laid down on 10 Mar 1966, *Butte* on 21 July 1966, *Santa Barbara* on 20 Dec 1966. Will carry helicopters. AE 28, 29 in the 1966 programme to be built by Bethlehem Steel Corp, Sparrows Pt, Md, will cost \$47 814 000. Two more AE in the 1967 programme.

5 "Suribachi" Class

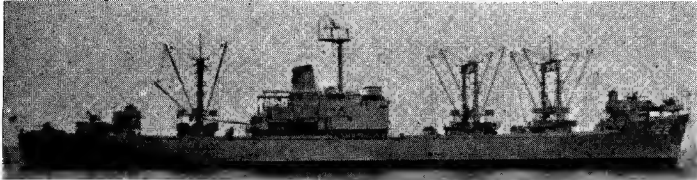
Name	No.	Laid down	Launched	Completed
HALEAKALA	AE 25	10 Mar 1958	17 Feb 1959	3 Nov 1959
MAUNA KEA	AE 22	16 May 1955	3 May 1956	30 Mar 1957
NITRO	AE 23	20 May 1957	25 June 1958	1 May 1959
PYRO	AE 24	21 Oct 1957	5 Nov 1958	24 July 1959
SURIBACHI	AE 21	31 Jan 1955	2 Nov 1955	2 Nov 1956

Displacement, tons	7 470 light; 10 000 standard; 17 500 full load
Measurement, tons	7 500 deadweight
Dimensions, feet	488-5 pp; 512 oa x 72 x 29 max
Guns	8—3 in, 40 cal AA (4 twin)
Main engines	Steam turbines; 1 shaft; 16 000 hp = 21 knots
Radius, miles	10 000 at 18-5 knots endurance
Complement	316 (18 officers, 298 men)

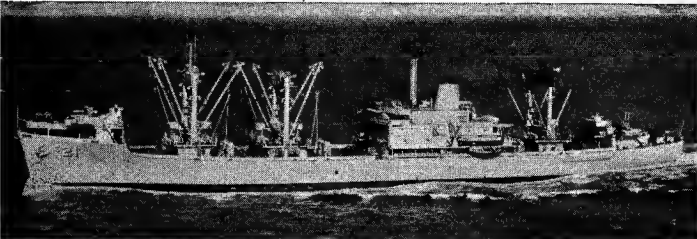
CONSTRUCTION. Designed especially to meet the strenuous requirements of rapid replenishment at sea. Built from the hull up as Navy Ships. Have elevators for internal handling of ammunition and explosives, up-to-date methods of stowage, air conditioning, redesigned crew quarters and habitability improvements. Built by Bethlehem, Sparrows Point, Md, Shipyard. Another to have been built under the 1959 programme was cancelled. *Nitro* and *Pyro* are fitted with constant tension devices designed for transfer of ammunition.

CONVERSION. The two "FAST" (Fast Automatic Shuttle Transfer) conversions in the 1963 Programme. *Haleakala* and *Suribachi*, were the first of this class to be modernised for the rapid handling and transfer of missiles up to the size of "Talos". This conversion provides for three holds to be rigged for missile stowage; completely mechanised handling facilities to transfer missiles from stowage to transfer stations; and the installation of the fast automatic shuttle transfer system. This modernisation results in safer missile handling and a greatly reduced transfer time. The two after mountings were removed for the laying on of a helo platform. The remaining three ships underwent the "FAST" conversion in the 1964 conversion programme.

PHOTOGRAPHS. Starboard bow surface view of *Pyro* in the 1962-63 to 1964-65 editions.



MAUNA KEA 1965, Hajime Fukaya



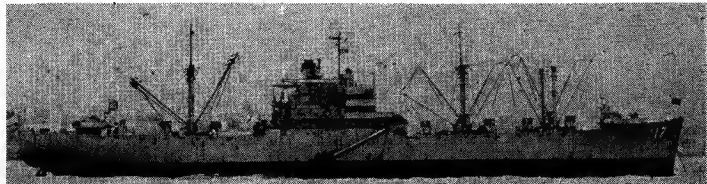
SURIBACHI Added 1960, Skyfotos

7 "Wrangell" Class

	No.	Launched
DIAMOND HEAD	AE 19	3 Feb 1945
FIREDRAKE (ex-Winged Racer)	AE 14	12 May 1944
GREAT SITKIN	AE 17	26 Jan 1945
MOUNT KATMAI	AE 16	6 Jan 1945
PARICUTIN	AE 18	30 Jan 1945
VESUVIUS (ex-Gamecock)	AE 15	26 May 1944
WRANGELL (ex-Midnight)	AE 12	14 Apr 1944

Displacement, tons	6 350 light; 15 295 full load
Dimensions, feet	435 wl; 459-5 oa x 63 x 28-2
Guns	4—3 in, 50 cal single
Main engines	Geared turbines; 6 000 shp = 16-4 knots
Complement	267

C2 type. The 5 inch gun and four 40 mm AA guns were removed. A photograph of *Wrangell* appears in the 1946-47 to 1954-55 editions, of *Mount Katmai* in the 1955-56 to 1960-61 editions, of *Parakutin* in the 1961-62 to 1965-66 editions.



GREAT SITKIN 1966, courtesy Dr Giorgio Arra

Ammunition Ships—continued

2 "Andromeda" Class

CHARA (ex-AKA 58) AE 31	VIRGO (ex-AKA 20) AE 30
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Former Attack Cargo Ships. Reacquired in 1965 from Maritime Administration, to which they had been transferred in 1961, and reclassified as Ammunition Ships on 1 Nov 1965. Recommissioned in 1966. For particulars see under "Andromeda" Class on page 424. Four single 3 inch, 50 cal guns, two forward, two aft.

5 "Lassen" Class

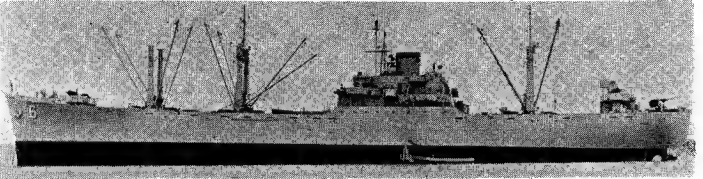
Name	No.	Launched
MAUNA LOA	AE 8	14 Apr 1943
MAZAMA	AE 9	15 Aug 1943
MOUNT BAKER (ex-Kilauea, ex-Surprise)	AE 4	6 Aug 1940
RAINER (ex-Rainbow)	AE 5	1 Mar 1941
SHASTA (ex-Comet)	AE 6	9 July 1941

Displacement, tons	5 220 light; 14 225 full load
Dimensions, feet	435 wl; 459 oa x 63 x 26-5
Guns	4—3 in, 50 cal single
Main engines	2 Nordberg diesels; 6 000 bhp = 15-3 knots
Complement	281

All built by Tampa SB Co. Modified C2 type, converted by Navy. Carries 5 000 tons cargo. War loss: *Mount Hood*. A photograph of *Mazuma* appears in the 1955-56 to 1947-58 editions. *Akutan* AE 13 was disposed of in 1961, *Mazuma* and *Mauna Loa* were reacquired and returned to the Navy in Sep 1961 and recommissioned on 27 Nov 1961. *Lassen* AE 3, in 1961 transferred to Maritime Administration.

DISPOSALS

Of the two ammunition ships of the "Sangay" class, *Sangay* was stricken in 1961, and *Formalhaut* transferred to Maritime Administration in Sep 1962.



SHASTA 1965, United States Navy, Official

GENERAL STORES ISSUE SHIPS (AKS)

1 "Altair" Class

ALTAIR (ex-AK 257, ex-Aberdeen Victory) AKS 32

Displacement, tons	4 420 light; 15 580 full load
Dimensions, feet	455-2 oa x 62 x 28-5 max
Guns	4—40 mm AA (2 twin)
Main engines	Geared turbines; 8 500 shp = 16-5 knots
Complement	320 (17 officers, 213 men) total accommodation

VC 2-AP 3 type. Launched on 20 Apr 1944. Reclassified AKS in 1952. Now has a helicopter platform on the fantail. *Antares* (ex-Nampa Victory), AKS 33 (ex-AK 258), reclassified AKS on 1 Apr 1959, transferred to Maritime Administration in Sep 1965 (photograph in the 1962-63 to 1966-67 editions).

2 "Castor" Class

CASTOR (ex-Challenge) AKS 1	POLLUX (ex-AK 54, ex-Nancy Lykes) AKS 4
------------------------------------	--

Displacement, tons	6 365 light; 14 400 full load
Dimensions, feet	435 pp; 495-2 oa x 63 x 26-5 max
Guns	4—3 in, 50 cal single
Main engines	Geared turbines; 6 000 shp = 16-4 knots
Complement	205 (15 officers, 190 men)

C2 Cargo and C2-F types. Cargo capacity: 5 400 tons. Both built by Federal Shipbuilding & Dry Dock, Kearny, NJ, and launched 20 May 1939 and 1941, respectively. *Castor* completed a \$400 000 internal conversion at San Francisco in 1956 for carrying combined "technical" and general stores. The 5 inch gun was removed.

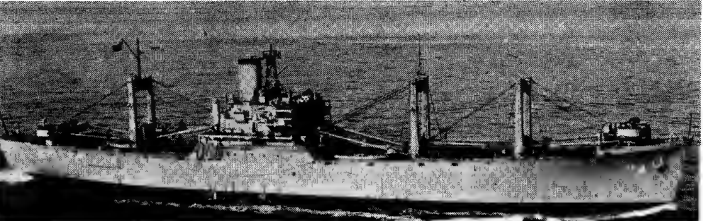
PHOTOGRAPHS. A port broadside view of *Castor* appears in the 1957-58 to 1966-67 editions.

DISPOSALS

Of this type *Mercury*, AKS 20 (ex-AK 42, ex-Mormactern, ex-Lightning) was stricken in 1960.

All five of the LST type *Chimon* AKS 31 (ex-AG 150, ex-LST 1102), *Colington* AKS 29 (ex-AG 148, ex-LST 1085), *Electron* AKS 27 (ex-AG 146, ex-LST 1070), *League Island* AKS 30 (ex-AG 149, ex-LST 1097), and *Proton*, AKS 28 (ex-AG 147, ex-LST 1078) were stricken in 1960.

All six of the "Island" class, *Avery Island* AKS 24, *Belle Isle* AKS 21, *Coaster's Harbor* AKS 22, *Cuttyhunk Island* AKS 23, *Indian Island* AKS 25 and *Kent Island* AKS 26, were also stricken in 1960.



POLLUX 1967, United States Navy, Official

STORE SHIPS (AF)

2 "Rigel" Class

RIGEL (15 Mar 1955) AF 58	VEGA (26 Apr 1955) AF 59
Displacement, tons	7 950 light; 15 540 full load
Measurement, tons	10 850 gross
Dimensions, feet	475 wl; 502 oa × 72 × 29 max
Guns	8—3 in
Main engines	Steam turbine; 1 shaft; 12 500 shp = 18 knots

Built by Ingalls Shipbuilding Co, Pascagoula R3-S-4A type. Cost \$12 440 000 each. Laid down on 15 Mar and 24 May 1954 respectively. Launch dates above. *Rigel* commissioned in 1955 and *Vega* on 10 Nov 1955. 360 000 cu ft of refrigerated space. First AFs built since the Second World War, with Navy designed hulls.



RIGEL 1965, A. & J. Pavia

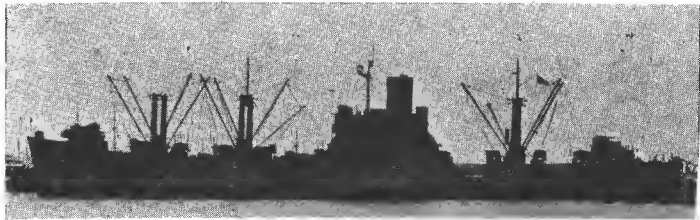
7 "Alstede" Class

ALSTEDE (ex-Ocean Chief) AF 48	BELLATRIX (ex-Fleetwood) AF 62
ALUDRA (ex-Matchless) AF 55	PICTOR (ex-Great Republic) AF 49
ARCTURUS AF 52	PROCYON (ex-Flying Scud) AF 61
	ZELIMA (ex-Golden Rocket) AF 54
Displacement, tons	6 914 light; 15 500 full load
Dimensions, feet	459.2 oa × 63 × 28
Guns	4—40 mm (2 twin); <i>Aludra</i> B—3 in 50 cal (4 twin).
Main engines	Geared turbines; 6 000 shp = 16.4 knots
Complement	17 officers, 275 men

All built by Moore Dry Dock Co and launched in 1945 and 1946. R2-S-BV design reefer type. *Aludra* was acquired for conversion by the Navy. *Pictor* was transferred from Maritime Administration to US Navy. C2-S-B1 type similar to R2-S-BV1 design, except that R2s were built as reefers and C2s as cargo ships. Same type as "Eagle" class, *Bellatrix* and *Procyon* were acquired from the Maritime Administration and commissioned in Nov 1961. *Arcturus* was commissioned on 11 Nov 1961. *Sirius* was transferred to the Maritime Administration Reserve Fleet in Aug 1965.



ARCTURUS 1967, United States Navy, Official

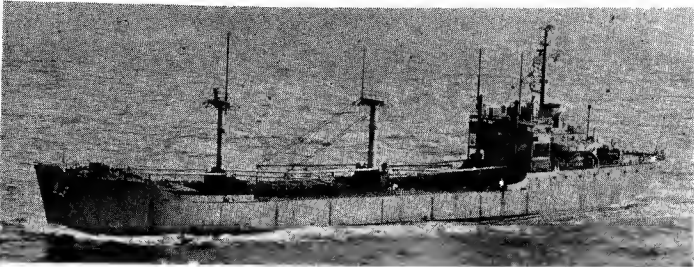


ALSTEDE 1962, Ing Augusto Nani

2 "Adria" Class

BONDIA (9 Nov 1944) (USNS) T-AF 42	
LAURENTIA (ex-Wall and Crown, 12 Dec 1944) (USNS) T-AF 44	
Displacement, tons	3 139 light; 7 435 full load
Dimensions, feet	320 wl; 338.5 oa × 50 × 21 max
Main engines	Nordberg diesel; 1 700 bhp = 11.5 knots

Launch dates above. *Kerstin* and *Latona* were returned to Maritime Commission. 2 100 tons cargo. R1-M-AV 3 type. *Bondia* and *Laurentia* are assigned to Military Sea Transportation Service, unarmed. *Valentine* was transferred to the Maritime Administration by MSTs on 16 Apr 1959. *Adria*, *Arequipa*, *Cordoba*, *Karin*, *Lioba*, *Malabar* and *Merapi* were stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in 1960-61.



BONDIA 1965, Skyfotos

2 "Eagle" Class

BALD EAGLE T-AF 50	BLUE JACKET T-AF 51
Displacement, tons	7 430 light; 12 800 full load
Dimensions, feet	459.2 oa × 63 × 24 max
Main engines	Turbine; 6 000 shp = 16.4 knots

Both built by Moore Dry Dock Co. Launched in 1942. Military Sea Transportation Service Ships designated USNS. MC Type C2-S-B1. Sister ship *Golden Eagle* was converted, renamed *Arcturus* (see Col 1). A photograph of *Blue Jacket* appears in the 1959-60 to 1964-65 editions.

1 "Aldebaran" Class

ALDEBARAN (ex-Staghound) AF 10

Displacement, tons	6 501 light; 13 860 full load
Dimensions, feet	435 wl; 459.2 oa × 63 × 25.9 max
Guns	4—3 in, 50 cal single
Main engines	Geared turbines; 6 000 shp = 16.4 knots
Boilers	2 Babcock & Wilcox

Launched on 21 June 1939. C-2 Cargo type. A Photograph of *Aldebaran* appears in the 1957-5B edition.

2 "Hyades" Class

GRAFFIAS (ex-Topa Topa) AF 29	HYDES (ex-Iberville) AF 28
Displacement, tons	6 313 light; 15 300 full load
Dimensions, feet	445 pp; 463.6 oa × 63 × 28
Guns	4—3 in, 50 cal single
Main engines	Geared turbines; 6 000 shp = 15.5 knots
Boilers	2 Babcock & Wilcox
Complement	252

Launched on 12 Dec 1943 and 12 June 1942, respectively. Cargo capacity 5 300 tons. The 5 inch gun was removed.

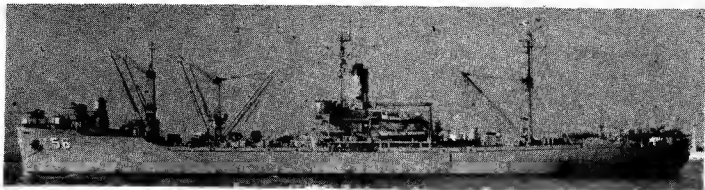


HYADES Added 1959, Ing Augusti Nani

2 "Denebola" Class

DENEbola (ex-Hibbing Victory) AF 56	REGULUS (ex-Escanaba Victory) AF 57
Displacement, tons	6 700 light; 12 130 full load
Measurement, tons	8 000 deadweight
Dimensions, feet	455.2 × 62 × 28.5
Guns	B—3 in, 50 cal AA, 4 twin on bow
Main engines	Westinghouse geared turbines; 1 shaft; 8 500 shp = 17 knots
Complement	225

Maritime administration ships acquired by the US Navy in 1952, for conversion to refrigerator store ships. VC2-S-AP 3 type. Built in 1944 by Oregon Shipbuilding Co. *Denebola* commissioned on 20 Jan 1954 after conversion by Todd, Brooklyn, *Regulus* on 3 Feb 1954. Insulated holds, refrigerated system, quick acting hatch covers. Conversion cost \$8 000 000.



DENEbola 1965, courtesy Godfrey H. Walker, Esq

2 Converted Type

ASTERION (ex-Arcadia Victory) T-AF 63 **PERSEUS** (ex-Union Victory) T-AF 64

Victory ships (VC 2-S-AP 3 type). Acquired from the Maritime Administration in 1962, and converted at Portland, Oregon, by Willamette Iron & Steel Co under the 1962 Programme. Of the same type as *Denebola* and *Regulus*, see above, except they are unarmed and manned by Civilian crews. USNS. MSTs.

DISPOSALS
The aviation supply ship *Jupiter* AVS 8, ex-AK 43 (ex-Santa Catalina, ex-Flying Cloud) was stricken from the Navy List and transferred to the Maritime Administration Reserve Fleet in Sep 1964.

VEHICLE CARGO SHIPS (LSV)

2 "Comet" Class

SEA LIFT T-LSV 9

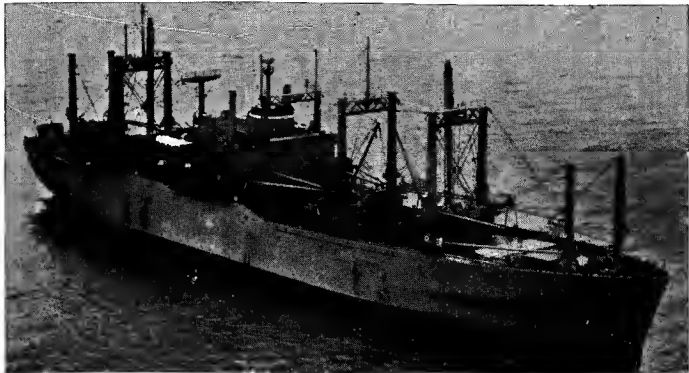
Displacement, tons	11 130 light; 16 940 standard; 21 700 full load
Measurement, tons	15 750 gross; 12 100 deadweight
Dimensions, feet	499 5 pp; 540 oa x 83 x 29 max
Main engines	Geared steam turbines; 2 shafts; 19 400 shp = 20 knots
Boilers	2 water tube
Oil fuel, tons	2 061
Radius, miles	10 000 miles at 20 knots
Complement	62 plus 12 Passengers

Improved roll-on/roll-off vehicle cargo ship. Maritime Administration C4-ST-67a type. Built by the Puget Sound Bridge & Dry Dock Co, (now Lockheed Shipbuilding and Construction Co), Seattle, Wash, at a cost of \$15 895 500. Authorised under the Fiscal Year 1963 programme. Laid down on 19 May 1964 and launched on 18 Apr 1965. Delivered to Navy on 25 Apr 1967 and to MSTs on 19 May 1967. Designed for point-to-point sea transportation of Department of Defense self-propelled, fully-loaded, wheeled, tracked and amphibious vehicles and general cargo. Her configuration of internal ramps, stern ramp and side openings will provide for quick loading and unloading. Unarmed and designated MSTs, USNS. A second ship was requested under the 1964 programme, but not approved. Requested again in 1965 but again funds not provided. A total of six were planned

COMET (ex-T-AK 269) T-LSV 7

Displacement, tons	7 605 light; 18 150 full load
Measurement, tons	12 750 gross; 6 500 deadweight
Dimensions, feet	465 pp; 499 oa x 78 x 28-8 max
Main engines	GE geared turbines; 2 shafts; 13 200 shp = 18 knots
Boilers	2 Babcock & Wilcox
Complement	73

Roll-on/Roll-off vehicle carrier built for MSTs by Sun Shipbuilding & Dry Dock Co. C3-ST-14A type. Laid down on 15 May 1956. Launched on 31 July 1957. Completed on 27 Jan 1958. Has ramp system for loading and discharging. The hull is strengthened against ice. Fitted with stern ramp. Can accommodate 700 vehicles in two after holds. The forward holds are for general cargo. Equipped with Denny-Brown Stabilisers. Reclassified from T-AK to T-LSV on 1 June 1963.



COMET 1959, United States Navy

TAURUS (ex-SS *Carib Queen*, ex-*Fort Snelling*, LSD 23) T-LSV B (ex-AK 273)

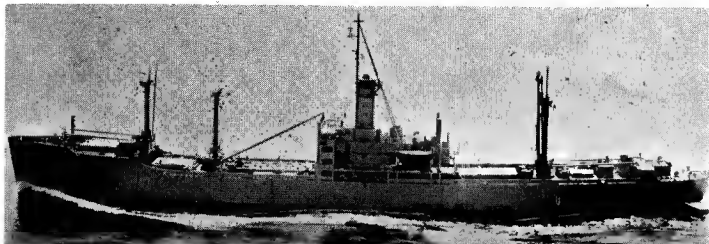
Displacement, tons	6 000 standard; 9 375 full load
Dimensions, feet	454 wl; 457-B oa x 76 2 x 18 max
Main engines	Westinghouse geared turbines; 2 shafts; 9 000 shp = 15-4 kts

Former US dock landing ship. Laid down on 8 Nov 1944 and hull built by the Gulf Shipbuilding Corporation, Chickasaw, Ala, in 1945, but not completed because of the ending of the war. Converted into a roll-on/roll-off trailer ship in 1956 for commercial operation. Acquired by MSTs from the Maritime Administration in 1958. USNS, civilian crew. Reclassified from T-AK 273 to T-LSV 8 on 1 June 1963.



TAURUS 1964, United States Navy, Official

FAST DEPLOYMENT LOGISTIC SHIPS (FDL): Deleted from this edition as it is doubtful if Congress will ever approve this programme. 30 ships were planned, each displacing 43 000 tons full load, at a total cost of \$1 000 000 000. Authorisation of the two ships to have been constructed under the FY 1966 programme was cancelled. See full particulars in 1966-67 edition.



VICTORIA 1967, United States Navy, Official

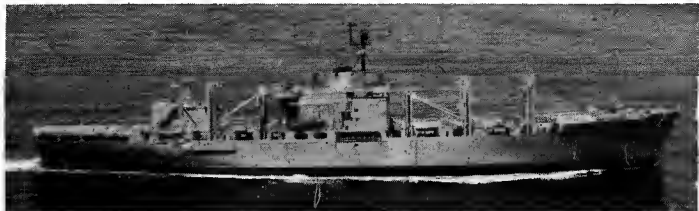
COMBAT STORE SHIPS (AFS)

7 "Mars" Class

	AFS		AFS
CONCORD (17 Dec 1966)	5	SYLVANIA (15 Aug 1963)	2
MARS (15 June 1963)	1	SAN DIEGO (2 Dec 1967)	6
NIAGARA FALLS (26 Mar 1966)	3	WHITE PLAINS (23 July 1966)	4
			7

Displacement, tons	16 500 full load
Dimensions, feet	530 pp; 581 oa x 79 x 24
Guns	8-3 in, 50 cal (4 twin)
Aircraft	2 helicopters (UH-46A Sea Knight)
Main engines	Steam turbines; 1 shaft; 22 000 shp = 20 knots
Boilers	3 Babcock & Wilcox (one spare)
Radius, miles	10 000 at 18-5 knots
Complement	403 (25 officers, 378 men)

All built by National Steel & Shipbuilding, San Diego, California. Of a new design with a completely new replenishment at sea system. "M" frames replace conventional king posts and booms, which are equipped with automatic tensioning devices to maintain transfer lines taut between the ship and the warships being replenished despite rolling and yawing. Helicopters are carried to fulfil vertical replenishment requirements for ships in a task force spread over a wide area. Prototype *Mars* was laid down on 5 May 1962 and commissioned on 21 Dec 1963. Launch dates above. AFS 7 is in the FY 1967 programme.



SYLVANIA 1965, United States Navy, Official

FAST COMBAT SUPPORT SHIPS (AOE)

4 Underway Replenishment Type

SACRAMENTO (14 Sep 1963)	AOE 1	SEATTLE	AOE 3
CAMDEN (29 May 1965)	AOE 2	DETROIT	AOE 4

Displacement, tons	19 200 light; 53 600 full load
Dimensions, feet	793 oa x 107 x 39 3
Guns	8-3 in, 50 cal (4 twin)
Aircraft	2 cargo helicopters aft (UH 46A Sea Knight)
Main engines	Geared turbines; 100 000 shp = 26 knots sustained speed (engines built for battleship <i>Kentucky</i>)
Radius, miles	10 000 at 17 knots
Complement	600 (33 officers, 567 men)

A new class of Fast Combat Support Ships (AOE) to supply task forces. Fitted with "FAST". They combine the functions of ammunition ships, cargo ships and fleet oilers. They carry one fifth more fuel than the latest fleet oilers (black oil, diesel oil and aviation spirit), and one quarter the capacity of the latest ammunition ship, including guided missiles, as well as 250 tons of dry cargo and 250 tons of frozen food. Oil capacity 177 000 barrels. *Detroit*, *Seattle* and *Sacramento* were built by Puget Sound Naval Shipyard, *Camden* was built by New York Shipbuilding Corporation, Camden, New Jersey. Launch dates above.



SACRAMENTO 1964, courtesy "Our Navy"

CARGO-FBM RESUPPLY SHIPS (T-AK)

3 New Conversion

NORWALK (ex- <i>Norwalk Victory</i>)	T-AK 279
FURMAN (ex- <i>Furman Victory</i>)	T-AK 280
VICTORIA (ex- <i>Ethiopia Victory</i>)	T-AK 281

Displacement, tons	11 150 full load
Dimensions, feet	455 x 62

Fleet ballistic missile resupply cargo ships AK (FBM). *Norwalk* was the first conversion of this VC 2-S-AP 3 type for supporting ballistic missile submarine operations. Designed as a one-stop cargo ship to provide complete resupply of a deployed fleet ballistic missile submarine tender. The logistic support includes "Polaris" missiles, submarine weapons, technical spares, packaged petroleum products, bottled gas, black oil and diesel fuel, general cargo, and frozen and dry provisions. Operated as an independent unit with a civilian (MSTs) crew and with a Navy unit embarked. She was converted from a "Victory" ship by Boland Machine and Mfg Co, and accepted on 30 Dec 1963. Conversion of *Furman* was completed by American Shipbuilding Co in Oct 1964. Conversion of *Victoria* completed by Philadelphia Naval Shipyard in Oct 1965. All acquired from the Maritime Administration reserve fleet.

CARGO SHIPS (AK)

	No.	Launched	Taken over
ELTANIN (ex-T-AK 270)	T-AGOR 8	16 Jan 1957	2 Aug 1957
MIRFAK	T-AK 271	5 Aug 1957	4 Oct 1957
MIZAR (ex-T-AK 272)	T-AGOR 11	7 Oct 1957	22 Nov 1957

Displacement, tons	2 036 light; 4 942 full load
Measurement, tons	2 486 gross; 1 300 deadweight
Dimensions, feet	247.8 pp; 256.8 wl; 262.2 oa × 51.5 × 18.7
Main engines	2 ALCO diesels with Westinghouse electric motors; 2 shafts; 3 200 bhp = 13 knots

Built for MSTs by Avondale Marine Ways, New Orleans, La. Designed for Arctic operation with hull strengthened against ice. C1-M E2-13a type. Laid down on 4 June 1956, 5 July 1956 and 21 Jan 1957, respectively.

CONVERSION. *Eltanin* was converted in 1961 into a scientific laboratory for Antarctic research programme for the National Science Foundation. Equipped to study meteorology, the upper atmosphere, marine and terrestrial biology, physical oceanography, submarine geology, and geomagnetic conditions. Owned by MSTs. Reclassified from T-AK 270 to T-AGOR 8 on 15 Nov 1962. Crew of 48 plus 38 scientific and technical staff. *Mizar* was reclassified T-AGOR 11 on 15 Apr 1964.



ELTANIN

1967

2 "Victory" FBM Type

ALCOR (ex-Rockland Victory) AK 259 **BETELGEUSE** (ex-Colombia Victory) AK 260

Displacement, tons	4 420 Navy light, 15 580 full load (Maritime Commission deadweight 10 850 tons)
Dimensions, feet	455.2 oa × 62 × 28.5 max
Guns	8—40 mm AA (4 twin)
Main engines	Geared turbines; 8 500 shp = 16.5 knots

VC2-S-AP3 type. Laid down in 1944. Reactivated for the Navy in 1951 from the Maritime Administration Reserve Fleet. Both ships have been fitted with special equipment to transport material and supplies for fleet ballistic missile submarines. A photograph of *Alcor* appears in the 1953-54 to 1957-58 editions.

DISPOSALS

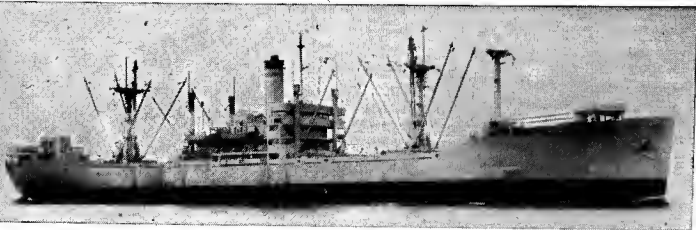
Of the "Alcona" class, *Sussex* AK 213, was stricken on 1 Jan 1960, and *Alcona* AK 157, *Beltrami* AK 162, *Faribault* AK 179, and *Grainger* AK 184, end 1960. All six vessels of the "Alchiba" class, namely *Alchiba* (ex-Charles E. Winsor), *Algorab* (ex-Elisha Whitney), *Aquarius* (ex-John D. Whitney), *Centaurus* (ex-Nathaniel Brown), *Cepheus* (ex-Richard W. Dixie) and *Serpens* (ex-William Lester) AK 261 to 266, respectively, were stricken on 1 Feb 1960.

7 "Victory" Type

PRIVATE FRANCIS X. McGRAW (ex-Wabash Victory)	T-AK 241
SERGEANT ANDREW MILLER (ex-Radcliffe Victory)	T-AK 242
SERGEANT ARCHER T. GAMMON (ex-Yale Victory)	T-AK 243
SERGEANT MORRIS E. CRAIN (ex-Mills Victory)	T-AK 244
LT. GEORGE W. G. BOYCE (ex-Waterville Victory)	T-AK 251
LT. ROBERT CRAIG (ex-Bowling Green Victory)	T-AK 252
SERGEANT TRUMAN KIMBRO	T-AK 254

Displacement, tons	6 700 light; 12 400 full load
Dimensions, feet	455 × 62 × 24
Main engines	Geared turbines; 6 000 shp = 15.5 knots

T-AK 251, 252 and 254 are VC2-S-AP2, the others VC2-S-AP3 type. (AK-278 authorised in Aug 1962 for the Military Sea Transportation Service, was assigned a new designation and hull number, LSV 9, *Sea Lift*, see previous page). *Pvt Joe E. Mann* T-AK 253, ex-Owensboro Victory, was fitted out as a range instrumentation and telemetry ship for the Pacific Missile Range in Oct 1958 and renamed *Richfield* T-AGM 4 in 1969 (see page 427). *Sagita* T-AK 87 (ex-SS Moses Pike) and *Vela* T-AK 89 (ex-SS Charles A. Roulett) transferred to the Maritime Administration in July 1961 and on 3 Apr 1959.



SERGEANT MORRIS E. CRAIN

1964, Wright & Logan

GREENVILLE VICTORY	T-AK 237
LIEUT JAMES E. ROBINSON	
(ex-T-AG 170, ex-T-AK 274, ex-Czechoslovakia Victory)	T-AK 274
PRIVATE JOHN R. TOWLE (ex-Appleton Victory)	T-AK 240
PRIVATE JOSEPH F. MERRELL (ex-Grange Victory)	T-AK 275
SERGEANT JACK J. PENDLETON	T-AK 276

Displacement, tons	6 720 light; 12 450 full load
Dimensions, feet	455 oa × 62 × 24 max
Main engines	Turbine; 8,500 shp = 16.5 to 17.7 knots

VC2-S-AP3 type. *Greenville Victory* has been winterized. *Dalton Victory* and *Haiti Victory*, renamed *Sunnyvale* and *Longview*, respectively, see earlier page (both USNS) are specially equipped to recover satellite capsules or missiles in the Pacific Missile Range, and are fitted with a helicopter deck and hangar for two helicopters.

PHOTOGRAPHS. A photograph of *Lieut. James F. Robinson* appears in the 1953-54 to 1959-60 editions and of *Private John R. Towle* in the 1959-60 to 1963-64 editions.

RECLASSIFICATION. The former Military Sea Transportation Service Aircraft Cargo and Ferry Ships *Lieut. James E. Robinson*, *Private Joseph F. Merrell* and *Sergeant Jack J. Pendleton*, AKV 3, AKV 4 and AKV 5, respectively, were reclassified as Cargo Ships, AK 274, AK 275 and AK 276 on 7 May 1959. *Kingsport Victory* T-AK 239, was renamed and reclassified *Kingsport* T-AG 164 in 1962 for Project "Advent". *Lieut. James E. Robinson* T-AK 274, was to have been transferred to the Maritime Administration, but was modified for special project work and reclassified as T-AG 170 in 1963, and reverted to the original classification T-AK 274 on 1 July 1964.



GREENVILLE VICTORY

1964, Skyfotos

COLONEL WILLIAM J. O'BRIEN (ex-Maiden's Eye)	T-AK 246
SHORT SPlice	T-AK 249
PVT. FRANK J. PETRARCA (ex-Long Splice)	T-AK 250
FENTRESS (ex-V 206)	T-AK 180
HERKIMER (ex-V 203)	T-AK 188
MUSKINGUM (ex-V 208)	T-AK 198

Displacement, tons	2 460 light; 7 450 full load
Dimensions, feet	338.7 × 50 × 21
Main engines	Diesel; 1 750 bhp = 11.5 knots

C1-M-AV1 Type. *Colonel William J. O'Brien* and *Short Splice* were converted to heavy lift ships with two 80-ton cranes during Aug-Nov 1954.

TRANSFERS. *Pembina* T-AK 200 and *Captain Ario L. Olsen* T-AK 245 (ex-Bell Ringer) were transferred to the Maritime Administration in 1958. *Pembina* T-AK 200, and *Private John F. Thorson* T-AK 247, were stricken from the Navy List in 1959. *Sergeant George Peterson*, T-AK 248, was transferred to the Maritime Administration by the MSTs. *Pvt Frank J. Petrarca* T-AK 250, was stricken on 9 Apr 1959, but was reacquired by the MSTs in 1960. *Hennepin* T-AK 187 (ex-V 205) and *Sergeant George Peterson* T-AK 248, stricken on 27 Mar 1959 were transferred to the Maritime Administration.

PVT. LEONARD C. BROSTROM (ex-Marine Eagle)	T-AK 255
MARINE FIDDLER	T-AK 267

Dimensions, feet	520 oa × 72 × 33
Main engines	Geared turbine; 9 000 shp = 17 knots

C4-S-B1 and C4-S-85 Types, respectively. *Marine Fiddler* was built in 1945, and acquired from the Maritime Administration Reserve Fleet in 1952. Both were converted to heavy lift ships for carrying locomotives and general cargo in 1954.

PHOTOGRAPHS. A photograph of *Private Leonard C. Brostrom* appears in the 1954-55 to 1957-58 editions and of *Short Splice* in the 1958-59 to 1966-67 editions.



MARINE FIDDLER

1964, United States Navy, Official

SCHUYLER OTIS BLAND T-AK 277

Displacement, tons	8 918 gross; 10 516 deadweight
Dimensions, feet	478 × 66 × 30
Main engines	Steam turbine; speed = 18.5 knots

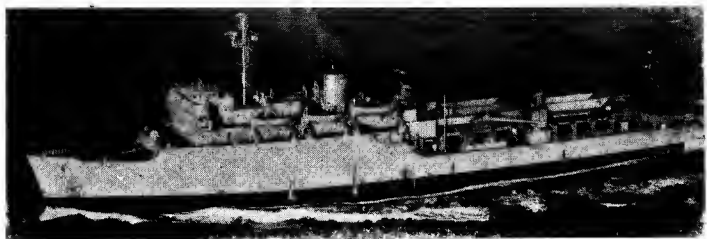
Acquired from the Maritime Administration by the Military Sea Transportation Service in July 1961. The only ship of the type (C3-S-DX2 type). Designated USNS with civilian crew, and unarmed.

DOCK CARGO SHIP (AKD)

POINT BARROW (25 May 1957) T-AKD 1

Displacement, tons	5 940 light; 9 415 standard; 14 094 full load
Measurement, tons	12 000 gross; 4 020 deadweight
Dimensions, feet	462 pp, 475 wl; 492 oa x 78 x 22
Main engines	Turbine, 2 shafts; 6 000 shp = 18 knots
Radius, miles	10 000 cruising
Complement	66 plus 42 transients

Built for MSTs by Maryland Shipbuilding & Dry Dock Co. Laid down on 18 Sep 1956 and commissioned on 28 Feb 1958. Delivered to MSTs on 29 May 1958. S2-ST-23A type. Roll-on, Roll-off ship to load vehicles on ramp and have overhead gear for general cargo. Arcticised and adapted for polar exploration. Ballasting arrangement permits embarking and debarking landing craft as in Dock Landing Ships. An aerial view of the ship, showing after deck and well, appears in the 1959-60 to 1963-64 editions.



POINT BARROW 1964, Skyfotos

LIGHT CARGO SHIPS (AKL)

BANNER (ex-Capt Wm M. Galt, ex-FS 345)	AKL 25
BRULE (ex-FS 370)	AKL 28
MARK (ex-FS 214, ex-AG 143)	AKL 12
PALM BEACH (ex-FS 217)	AKL 45
PUEBLO (ex-FS 344)	AKL 44

Small cargo carriers taken over from the Army. Armament: 20 mm. AKL 25 and AKL 28, were named, armed and commissioned in 1952 (ex-USNS). *Sharps* (AKL 10) was transferred to Korea under MDAP in 1956). *Banner* was converted to a special project ship in 1965. *Palm Beach* and *Pueblo* acquired from army 1966.

DISPOSALS
Tingles AKL 13, was stricken from the Navy List in 1959, *Camano* AKL 1, *Esterio* AKL 5, *Hewell* AKL 14 and *Jekyl* AKL 6, in 1960, *Deal* AKL 2, and *Ryer* AKL 9, in July 1961 and sold in 1962.
Alcyone (ex-FS 195), *Alhena* (ex-FS 257), *Almaack* (ex-FS 283), *Delmos* (ex-FS 390), *Pamina* (ex-FS 528) and *Renate* (ex-FS 547), same type as "Camano" class, acquired from the Army in 1952. AKL 37-42, respectively, formerly on loan to Korea but carrying US names and designations, were stricken on 1 Feb 1960.

REDBUD T-AKL 398

Former US Coast Guard Tender (WAGL). Launched on 11 Sep 1943. Of "Basswood" class (see later page), transferred to Navy for special transport and supply service in Greenland, and in Feb 1952 to Military Sea Transportation Service as multi-purpose freighter combination icebreaker, light cargo vessel and radio communications ship, USNS.

AKL 17 (ex-New Bedford, ex-FS 289) **T-AKL 31** (ex-FS 407)

Same type as "Camano" class; but unarmed. Complement 23. T-AKL 35 was transferred to the Korean Navy in 1956. T-AKL 31 is operated by MSTs. AKL 17 is operated by the Naval Torpedo Station, Keyport, Wash.

DISPOSALS
T-AKL 33 was stricken from the list on 26 Apr 1958. T-AKL 24 and 34 in 1959, T-AKL 15, 16, 18, 19, 21, 23, 26 and 36 on 1 May 1959, 1 Nov 1959, and in 1960. AKL 29 in 1960. AKL 20, 22, 30 and 32 in July 1961. T-AKL 43 on 1 Oct 1943. AKL 27, stricken 27 Apr 1966, used for salvage training.

COASTAL TRANSPORT (APC)

SERGEANT JONAH E. KELLEY (ex-Link Splice) T-APC 116

Displacement, tons	2 460 light; 7 460 full load
Dimensions, feet	338-8 x 50 x 21
Main engines	Diesel; 1 750 bhp = 11.5 knots

Military Sea Transportation Service C1-M-AV1 Type. *Private Jose F. Valdez* re-acquired from the Maritime Administration, returned to the Navy in Aug 1961, and reclassified as T-AG 169 in 1963. She and T-AG 171 are Special Project Ships.

DISPOSALS
Of this type, *Sergeant George D. Keathley* T-APC 117 (ex-Acorn Knot, ex-Alexander R. Niminger, Sr), and *Sergeant Joseph E. Muller* T-APC 118 (ex-Check Knot), were transferred to the Maritime Administration in 1959, but the latter was reacquired in 1962 and reclassified as T-AG 171 in 1963 and the former was reacquired in 1966 and redesignated T-AGS 35 on 1 Dec 1966.

SALVAGE LIFTING SHIPS

GYPSY (ex-LSM 549) ARSD 1	MENDER (ex-LSM 550) ARSD 2
Displacement, tons	740 standard; 1 095 full load
Dimensions, feet	224-2 x 34 x 7
Main engines	Diesel; 2 shafts; 2 800 bhp = 13 knots

Used as diving tenders. Both launched on 7 Dec 1945. In the Pacific Reserve Fleet. Sister ships *Salvager* (ex-LSM 551) ARSD 3 and *Windlass* (ex-LSM 522) ARSD 4 have been loaned to a commercial firm, Merrit, Chapman and Scott.

SALVAGE TENDERS (ARST)

LAYSAN ISLAND (ex-LST 1098) ARST 1	PALMYRA (ex-LST 1100) ARST 3
Displacement, tons	1 653 standard; 4 080 full load
Dimensions, feet	328 x 50 x 11; 14.3 max
Main engines	Diesel; 2 shafts; 1 800 bhp = 11 knots

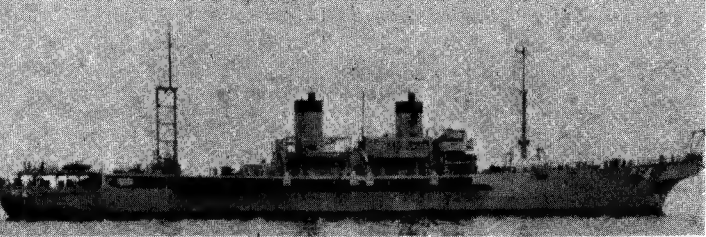
Former Tank Landing Ships. Out of commission, in reserve. A photograph of *Palmyra* appears in the 1949-50 to 1957-58 editions.

CABLE REPAIR SHIPS (ARC)

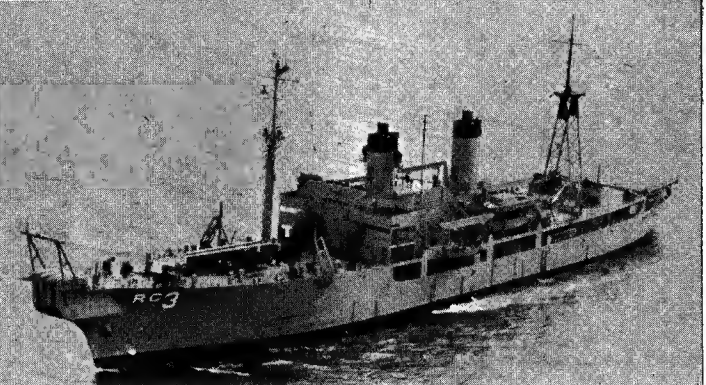
2 "Aeolus" Class

AEOLUS (ex-Turandot, AKA 47) ARC 3	THOR (ex-Vanadis, AKA 49) ARC 4
Displacement, tons	7 040 full load
Dimensions, feet	400 wl; 438 oa x 64 x 16
Main engines	Westinghouse turbo-electric; 6 000 shp = 16.9 knots

Aeolus (laid up in the Maritime Administration Reserve Fleet since June 1946) was reacquired by the Navy on 4 Nov 1954. Both converted to Cable Laying or Repair Ships by the Key Highway Plant of Bethlehem Steel, Baltimore, Maryland. *Aeolus* commissioned in May 1955. *Thor*, built by Walsh Kaiser Company, Providence, commissioned on 3 Jan 1956. Unarmed.



THOR 1966

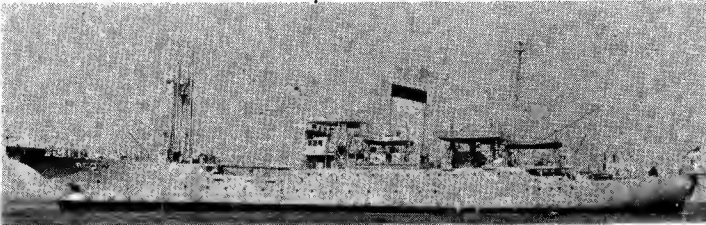


AEOLUS Added 1961, United States Navy, Official

2 "Neptune" Type

NEPTUNE (ex-William H. G. Bullard) ARC 2	ALBERT J. MYER T-ARC 6
Displacement, tons	7 387 full load
Measurement, tons	3 929 gross; 4 860 deadweight
Dimensions, feet	322 wl; 370 oa x 47 x 18
Main engines	Reciprocating Unaflow engines; 2 shafts; 4 800 ihp = 14 knots

Built by Pusey and Jones Corpn, Wilmington, Del. *Neptune* was launched in 1945 and completed in Feb 1946. Acquired from the Maritime Administration in 1953. Sister ship *Albert J. Myer*, US Army Cable Ship, on loan to the Military Sea Transportation Service, was acquired by the Navy in 1966 and designated T-ARC 6. Both of the S3-S2-BP1 type. Unarmed.



NEPTUNE United States Navy, Official

TRANSFER. The cable repair ship of the ex-LSM type, *Portunus* ARC 1 (ex-LSM 275) was transferred to Portugal on 1 May 1959.

DISPOSALS
The cable repair ship of the wooden type, *Nashawena* YAG 35 (ex-AG 142) was stricken in 1960.
The cable repair ship *Yamacraw* ARC 5 (ex-USCG WARC 333, ex-ACM 9, ex-Trapper) originally an Army minelayer and subsequently a US Navy auxiliary minelayer, afterwards employed as a US Coast Guard cable layer, then a US Navy cable repair ship until 1959, was stricken on 1 July 1965 and transferred to the Maritime Administration.

REPLENISHMENT FLEET OILERS (AOR)

4 + 2 New Construction

WICHITA	AOR 1	KANSAS CITY	AOR 3	AOR 5
MILWAUKEE	AOR 2		AOR 4	AOR 6
Displacement, tons	38 100 full load			
Dimensions, feet	659 wl; 675 oa x 96 x 35			
Guns	8-3 in, 50 cal (4 twin)			
Main engines	Geared turbines; 2 shafts; 20 knots			
Boilers	3 (18 knots on 2 boilers)			
Radius, miles	10 000 at 17 knots			
Complement	345 (20 officers, 325 men)			

AOR 1, 2 authorised under the Fiscal Year 1965 Programme; AOR 3, 4, 1966; AOR 5, 6, 1967. Fitted with helicopter platform. Will provide rapid replenishment at sea of petroleum products, ammunition, provisions and fleet freight to the operating forces. Being built by General Dynamics Corporation, Quincy. *Wichita* laid down 18 June 1966, *Milwaukee* 29 Nov 1966.

NETLAYERS (AN)

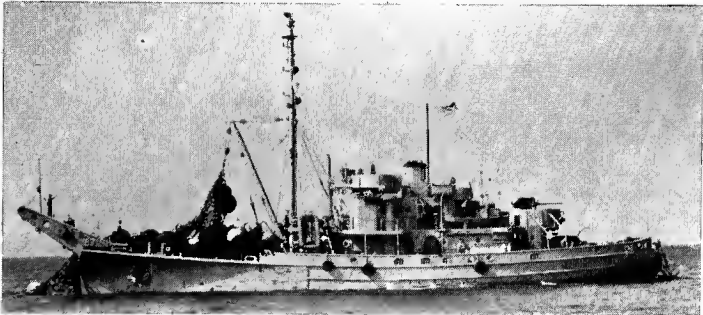
2 "Cohoes" Class

COHOES (29 Nov 1944) AN 78		NAHANT (June 1945) AN 83
Displacement, tons	650 standard; 855 full load	
Dimensions, feet	146 wl; 168.5 oa x 33.8 x 11.7 max	
Guns	3—20 mm single	
Main engines	Busch-Sulzer diesel-electric; 1 200 shp = 12 knots	
Complement	46 (4 officers, 42 men)	

Both built by Commercial Iron Works, Portland, Oregon.

TRANSFERS *Tonawanda* AN 89, was transferred to Haiti in 1960, *Marietta* AN 82 to Venezuela in Jan 1961, *Tunxis* AN 90, and *Waxsaw* AN 91 to Venezuela in Jan 1963.

DISPOSALS
Manayunk AN 81, *Naubuc* AN 84, *Suncock* AN 80 and *Tunxis* AN 90, were stricken from the Navy List in Sep 1962, *Etlah* AN 79, *Oneota* AN 85, *Passaconaway* AN 86, *Passaic* AN 87, *Shakamaxon* AN 88 and *Yazoo* AN 92, in July 1963. *Suncock* AN 80 was retransferred to the Bureau of Mines in Oct 1964. *Cohoes* AN 78 was reacquired for Maritime Administration in Mar 1967 for conversion to river/harbour salvage ship for use in Vietnam.



NAHANT Added 1964, United States Navy. Official

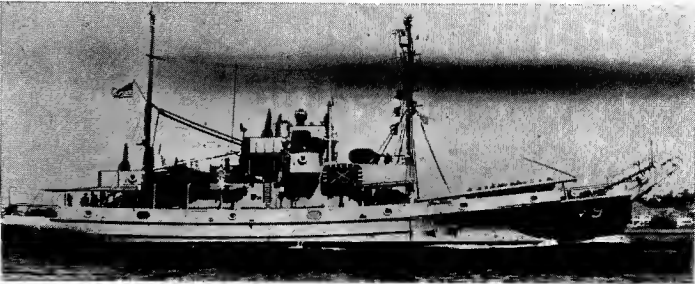
1 Tree Class

BUTTERNUT AN 9	
Displacement, tons	560 standard; 760 full load
Dimensions, feet	146 wl; 163 oa x 30.5 x 11.8 max
Guns	4—20 mm single
Main engines	Diesel-electric; 1 000 bhp = 11.5 knots
Complement	48 (4 officers, 44 men)

Former YN. Steel hull. Built by Lake Washington Shipyards, Houghton. Laid down on 11 Mar 1941, launched on 10 May 1941, completed on 3 Sep 1941.

TRANSFERS. *Hackberry* AN 25, *Pepperwood* AN 36 and *Yew* AN 37 were transferred to France in 1944, *Larch* AN 21 to Turkey in 1947, *Mulberry* AN 27, to Ecuador in 1965 (on loan), and *Locust* AN 22 to France in 1966 (sold).

DISPOSALS
Aloe AN 6, *Ash* AN 7, *Boxwood* AN 8, *Catalpa* AN 10, *Chestnut* AN 11, *Cinchana* AN 12, *Ebony* AN 15, *Eucalyptus* AN 16, *Holly* AN 19, *Elder* AN 20, *Mango* AN 24, *Mimosa* AN 26, *Palm* AN 28, *Hazel* AN 29, *Redwood* AN 30, *Rosewood* AN 31, *Sandalwood* AN 32, *Nutmeg* AN 33 and *Teak* AN 35, stricken from the Navy List in Sep 1962. *Teaberry* AN 34 stricken in 1961 became MS *Pacific Salvor* in 1962. *Buckeye* AN 13 and *Buckthorn* AN 14 stricken in July 1963 and transferred to Maritime Administration Reserve.

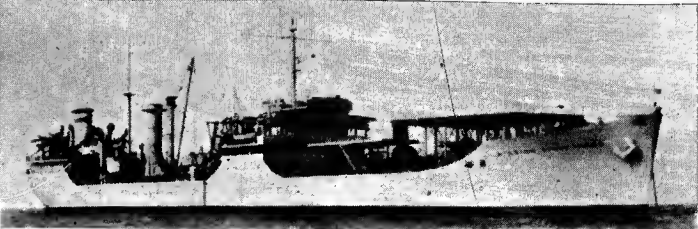


BUTTERNUT 1964, United States Navy. Official

SOUND TESTING EXPERIMENTAL SHIP

MISSION CAPISTRANO (ex-AO 112) T-AG 162	
Displacement, tons	17 000
Dimensions, feet	523.5 oa x 68 x 30.9
Main engines	Turbo-electric; 10 000 shp = 16 knots
Complement	74 civilian crew plus 52 special parties

Former oiler of "T2-SE" Type converted by Todd Shipyards, New Orleans, in connection with operations of Texas Tower Argus Island off Bermuda. Fitted with a sound transducer assembly five stories high. Used to test the huge sonar transducer in a giant new sonar system for detecting submarines at long range. The transducer can be raised and lowered as desired. Project "Artemis".



MISSION CAPISTRANO 1962, courtesy Mr W. H. Davis

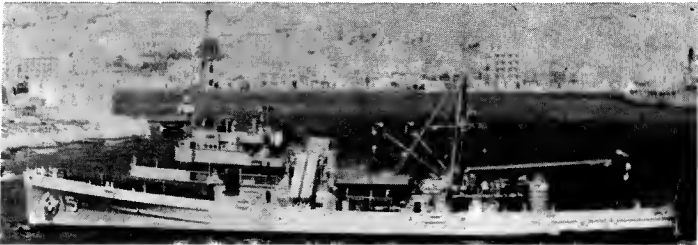
SUBMARINE RESCUE SHIPS (ASR)

8 "Chanticleer" Class

	ASR	Launched		ASR	Launched
CHANTICLEER	7	29 May 1942	KITTIWAKE	13	10 July 1945
COUCAL	8	29 May 1942	PETREL	14	26 Sep 1945
FLORIKAN	9	14 June 1942	SUNBIRD	15	3 Apr 1945
GREENLET	10	12 July 1942	TRINGA	16	25 June 1945
Displacement, tons	1 653 standard; 2 290 full load				
Dimensions, feet	240 wl; 251.5 oa x 42 x 14.9 max				
Main engines	Diesel-electric (Alco in first 4 ships, GM in others). 1 shaft; 3 000 bhp = 14.9 knots				
Complement	85				

ASR 7-10 built by Moore SB & DD Co, Oakland, and 13-16 by Savannah Machine & Foundry Co, Launch dates above. All equipped with powerful pumps, heavy air compressors and special submarine rescue chambers. Guns removed 1957-58. Photograph of *Kittiwake* in 1962-63 to 1966-67 editions.

NEW CONSTRUCTION. ASR 21 in FY 1967 Programme. First application of catamaran hull form to major USN ship. 210 wl x 26 (each hull), 86 max x 18.7, 3 200 tons full load, 16 knots, diesels, 6 000 shp, 2—3 inch single guns.

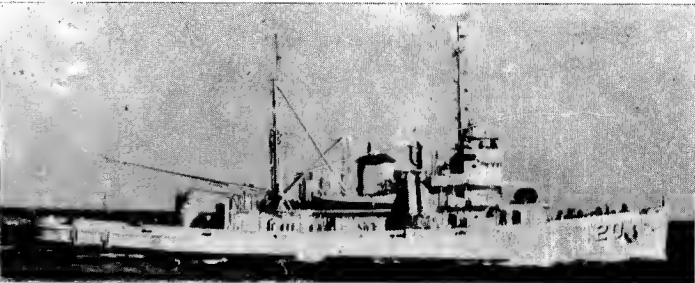


SUNBIRD 1967, A. & J. Pavia

2 "Penguin" Class

PENGUIN (ex- <i>Chetco</i> , 20 July 1943) ASR 12	
SKYLARK (ex- <i>Yustaga</i> , 1946) ASR 20	
Displacement, tons	1 235 standard; 1 740 full load
Dimensions, feet	195 wl; 205 oa x 38.5 x 15.3 max
Main engines	Diesel-electric; 3 000 bhp = 14 knots
Complement	85

Former fleet tugs, adapted in 1947. Built by Charleston S8 & DD Co, Charleston, SC. Guns removed. *Bluebird* ASR 19, was transferred to Turkey on 15 Aug 1950. A photograph of *Penguin* appears in the 1961-62 and 1962-63 editions.



SKYLARK 1963, A. & J. Pavia

SALVAGE SHIPS (ARS)

13 "Escape" Class

BOLSTER	ARS 38	23 Dec 1944	GRASP	ARS 24	31 July 1943
CONSERVER	ARS 39	27 Jan 1945	HOIST	ARS 40	31 Mar 1945
CURRENT	ARS 22	25 Sep 1943	OPPORTUNE	ARS 41	31 Mar 1945
DELIVER	ARS 23	25 Sep 1943	PRESERVER	ARS 8	1 Apr 1943
ESCAPE	ARS 6	22 Nov 1942	RECLAIMER	ARS 42	25 June 1945
GRAPPLE	ARS 7	31 Dec 1942	RECOVERY	ARS 43	4 Aug 1945
			SAFEGUARD	ARS 25	20 Nov 1943

Displacement, tons	1 530 standard; 1 900 full load
Dimensions, feet	207 wl; 213.5 oa x 39 x 43 x 13
Guns	1—40 mm AA; 2—50 cal MG
Main engines	Diesel-electric; 2 shafts; 2 440 shp = 14 knots
Complement	85

Built by Basalt Rock Co. *Cable* ARS 19, *Curb* ARS 21 and *Gear* ARS 34 are on loan to a private operator. *Clamp* (ex-*Atlantic Salvor*) ARS 33, was stricken in July 1963. A photograph of *Bolster* appears in the 1946-47 to 1957-58 editions, and of *Safeguard* in the 1958-59 to 1963-64 editions. Launch dates above.

Chain and *Snatch* were converted into Oceanographic Research Ships in 1958-60. *Chain* ARS 20, converted by the Savannah Machine & Foundry, was assigned to the Woods Hole Oceanographic Institute by the Office of Naval Research (AGOR 17). *Snatch* ARS 27 converted by Puget Sound Bridge and Drydock Co was assigned to the Scripps Institute of Oceanography by the ONR. Complement of 40 plus 28 scientists. Four laboratories, and winches for specialised work. Renamed *Argo* AGOR 18.



PRESERVER 1964, A. & J. Pavia

MINESWEEPING BOATS (MSB)

44 Shallow Draught Type

MSB	MSB	MSB	MSB	MSB	MSB	MSB	MSB
5	11	18	25	31	37	43	49
6	13	19	26	32	38	44	50
7	15	20	27	33	39	46	51
8	16	21	28	34	40	47	52
9	17	22	29	35	41	48	53
10		30	36	42			
Displacement, tons		30 light; 42 full load; except MSB 29, 81 full load					
Dimensions, feet		57.2 x 15.5 x 4 (MSB 29, 82 x 19 x 5.5)					
Main engines		Diesel engines; 2 shafts; 600 bhp = 10 knots					
Complement		6 to 8					

Wooden hulls. Designed to be carried in parent ships to theatre of operations. All built in 1951 and 1952, except MSB 29, launched on 5 Oct 1956. MSB 49 was heavily damaged by gunfire on 15 Feb 1967 in South Vietnam and beached, but was later salvaged.

ENGINEERING. MSB 5 was the first vessel built for the US Navy with gas turbine engines (used to provide the power for the boat's generators). 48 MSBs were fitted with gas turbine generators. MSB 23, destroyed by fire on 2 Feb 1955 while under construction was rebuilt as a plastic hulled vessel and delivered in Aug 1956, but was later reclassified as "equipment". MSB 24 was never built.

CLASS. Class B. MSB 5-22, 25-28, 30-53; Class C: MSB 29 (see Disposals).

PHOTOGRAPHS. A port oblique aerial view of MSB 8 appears in the 1957-58 to 1966-67 editions.

LOSSES. MSB 14 was sunk in collision with merchant ship, South Vietnam, Jan 1967. MAB 45 was sunk by mine, South Vietnam in Feb 1967. MSB 54 was mined and sunk in the Long Tan River, South Vietnam, on 1 Nov 1966.

DISPOSALS. Of the four ex-Army MLMs built in 1946, which constituted Class A, MSB 1 and MSB 3 were stricken on 1 Nov 1958, and MSB 2 and MSB 4 were transferred to Korea and Taiwan China, respectively, in Dec 1961. MSB 12 stricken 1 Apr 1964.



MSB 21 1967, United States Navy, Official

MOBILE BARRACKS SHIPS (APB)

8 "Ex-LST" Type

	APB		APB
BENEWAH (ex-APL 35)	35	KINGMAN (ex-AKS 18, ex-LST 1113)	47
COLLETON (ex-APL 36)	36	MERCER (ex-APL 39)	39
DORCHESTER (ex-AKS 17, ex-LST 1112)	46	NUECES (ex-APL 40)	40
ECHOLS (ex-APL 37)	37	VANDENBURGH (ex-ASK 19, ex-LST 114)	48
Displacement, tons		2 189 light; 4 080 full load	
Dimensions, feet		316 wl; 328 oa x 50 (extreme) x 11	
Guns		40 mm (No. of guns varies)	
Main engines		GM diesels; 2 shafts; 1 600 to 1 800 bhp = 12 knots (APB 41-50; 10 knots (APB 35-40))	

Officially rated as Self-Propelled Barracks Ships (APB). All ex-LST type ships of the same basic characteristics. BENEWAH and COLLETON recommissioned on 28 Jan 1967 for service in Vietnam fitted with two 3 inch 50 cal guns (single)

DISPOSALS. Sister ships ACCOMAC APB 49, CAMERON APB 50, PRESQUE ISLE APB 44, WYTHE APB 41, YAVAPAI APB 42 and YOLA APB 43, were stricken from the Navy List in 1959. BLACKFORD APB 45 (ex-AKS 16, ex-LST 1111) in 1960, and MARLBORO APB 38, on 1 Dec 1963. The barracks ship DUPAGE APB 51 (ex-SS JOHN R. WEEKS), converted "Liberty" type merchant vessel, was stricken on 1 June 1959.



BENEWAH Aldo Fraccaroli

UTILITY LANDING SHIPS (LCU)

45 "1610" and "1625" Classes (LCU)

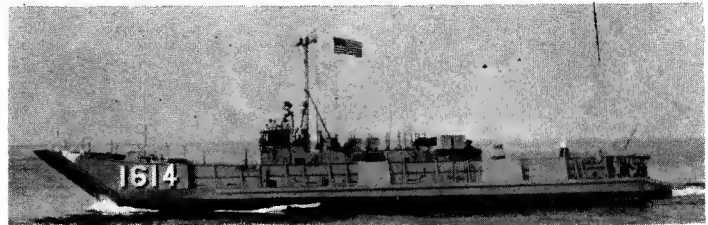
LCU 1610	LCU 1614	LCU 1618	LCU 1622	LCU 1627
LCU 1611	LCU 1615	LCU 1619	LCU 1623	LCU 1628
LCU 1612	LCU 1616	LCU 1620	LCU 1624	LCU 1629
LCU 1613	LCU 1617	LCU 1621	LCU 1625	LCU 1630
Displacement, tons		200 light; 375 full load		
Dimensions, feet		135.2 oa x 29 x 5.5		
Guns		2-20 mm AA		
Main engines		Diesels; 2 shafts; 2 000 bhp = 8 knots		
Complement		12		

LCU 1610-1619, authorised in the 1956 programme are longer than the older craft. LCU 1613-1619 were built by Gunderson Bros Engineering Corp, Portland, Oregon (contract awarded May 1947) and LCU 1610-1612 by Christy Corp, Sturgeon Bay, Wisconsin. All laid down in Feb-Dec 1958 and launched in July 1958-Mar 1959. Their original LST-type bow doors were changed to a ramp as in the older type. LCU 1622, authorised under the 1957 programme, had the same hull as the 1610 class but was equipped with vertical axis propellers and ramp type bow doors. Built by Weaver Shipyards, Texas, she is a steel vessel, powered by diesel engines and equipped with Kort nozzles. LCU 1623 and 1624 were built under the 1959 programme by Gunderson Bros. LCU 1620 and 1621 by Southern Shipbuilding Corporation, Slidell, Louisiana. LCU 1625, in the 1963 programme, was built by Southern Shipbuilding Corp with cycloid propellers, and delivered in July 1965. LCU 1626, 1629, 1630 also Southern Shipbuilding Co, and LCU 1627 and 1628 by General Ships & Engines Inc, both 1965 programme, LCU 1629 and 1630, 1966. LCU 1631 to 1645 are under construction under new programmes.

ENGINEERING. LCU 1621 is fitted with two right-angle drive propulsion units, port and starboard, which rotate through 360 degrees, providing thrust in any direction. The two units can be locked together or operated independently, and obviate the need for rudders and shafts. LCU 1620 has two 500 hp engines on vertical shafts fitted with vertical-axis cycloidal propellers (six-bladed). The LCU of the "1610" class, authorised under 1957 programme designed for a gas-turbine propulsion unit (an LCU was fitted with a gas turbine fire pump) was not built.

PHOTOGRAPHS. A photograph of LCU 1624 appears in the 1962-63 to 1966-67 editions.

TRANSFERS. LCU 1626 was transferred to Burma under Military Aid in 1967



LCU 1614 1967, United States Navy, Official

RECLASSIFICATION. All LCU types were reclassified from Service Craft to "Boats" in Nov 1958.

42 "1466" Series (ex-LCT)

LCU 1466	LCU 1475	LCU 1486	LCU 1494	LCU 1537
LCU 1467	LCU 1476	LCU 1487	LCU 1495	LCU 1539
LCU 1468	LCU 1477	LCU 1488	LCU 1497	LCU 1547
LCU 1469	LCU 1478	LCU 1489	LCU 1498	LCU 1548
LCU 1470	LCU 1482	LCU 1490	LCU 1499	LCU 1559
LCU 1471	LCU 1483	LCU 1491	LCU 1500	LCU 1576
LCU 1472	LCU 1484	LCU 1492	LCU 1525	LCU 1582
LCU 1473	LCU 1485	LCU 1493	LCU 1535	LCU 1608
			LCU 1536	LCU 1609

Displacement, tons	180 light; 360 full load
Dimensions, feet	115 wl; 119 oa x 34 x 6 max
Guns	2-20 mm
Main engines	3 diesels; 3 shafts; 675 bhp = 10 knots
Complement	14

Contracts announced on 2 Nov 1951. Basically the same as Second World War LCTs. Slightly longer and wider. Chief mission is still that of putting tanks and their crews on to beaches. Designation was changed from LCT to LCU because of their many additional uses, and subsequently (1952) to LCU. Built to be transferred on LSTs and off-loaded into water from LSTs. Five units were transferred to other countries under MDAP. 1478 to Norway, 1479, 1480, 1501, 1502 to Indo-China. One (LCU 1503) was lost in Aug 1953. LCU 1594-1607 were built as an off-shore procurement for the Military Aid Programme (OSP/MAP). Improved propulsion system in LCU 1608 and 1609 (1955 programme); Kort nozzle propellers, is the only difference from LCU 1466 to 1582 series.

26 LCU "501-1465" Series (ex-LCT 6)

LCU 539	LCU 660	LCU 768	LCU 1045	LCU 1387
LCU 588	LCU 666	LCU 780	LCU 1124	LCU 1430
LCU 599	LCU 667	LCU 803	LCU 1241	LCU 1451
LCU 608	LCU 674	LCU 871	LCU 1348	LCU 1459
LCU 654	LCU 742	LCU 893	LCU 1348	LCU 1462
				LCU 1463

Displacement, tons	143 to 160 light; 309 to 320 full load
Dimensions, feet	105 wl; 119 oa x 32.7 x 5 max
Guns	2-20 mm
Main engines	Gray Marine diesels; 3 shafts; 675 bhp = 10 knots
Complement	13

Conversion of Nos. 1273, 1330, 1363, 1452, 1463, 1347 for Arctic service was completed in Mar 1949. Formerly rated as Landing Ships, Tank (Small). Re-designated LSUs late 1949. Reclassified as LCUs on 15 Apr 1952. Can carry 4 tanks or 200 tons of cargo. Sixteen of these craft were recommissioned in 1956 for Vietnam service.

RECLASSIFICATION. LCUs 509, 637, 646, 709, 716, 776, 851, 916, 973, 989, 1126, 1165, 1203, 1232, 1385, 1388 and 1496 were reclassified YFU 54 to 70, respectively, on 1 Mar 1966.

DISPOSALS. LCU 815 was sold in May 1956, LCU 676, 1288 and 1362 were disposed of in 1957. LCU 1460 was lost at sea in 1952. LCU 569, 767, 1258, 1447, 1453 and 1454 were stricken in 1957, LCU 638, 700, 779, 1174, 1225, 1271, 1278 in 1958. LCU 1212, 1244, 1367, 1429 were transferred under the Military Aid Programme in 1959. LCU 1538 was sold in 1959 and LCU 1530 in 1960.

SPECIAL PROJECT SHIPS

2 Special Project Type

PRIVATE JOSE E. VALDEZ (ex-Round Splice, ex-Joe J. Martinez) T-AG 169 (ex-T-APC 119)
SERGEANT JOSEPH E. MULLER (ex-Check Knot) T-AG 171 (ex-T-APC 118)
Displacement, tons 2 460 light; 7 460 full load
Dimensions, feet 338 5 x 50 x 21
Main engines Diesel; 1 750 bhp = 11 5 knots

Now classed as auxiliaries, see particulars under Coastal Transport. T-AG 170 was reclassified as T-AK 274 in 1964.



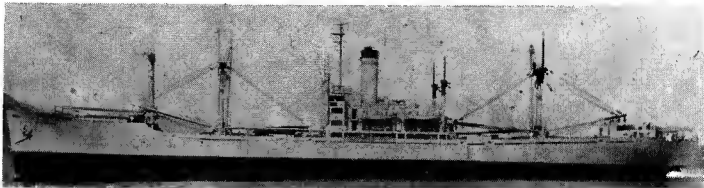
PRIVATE JOSE F. VALDEZ 1965, United States Navy, Official

3 Forward Depot Type

PHOENIX (ex-Arizona, ex-Capitol Victory) T-AG 172
PROVO (ex-Utah, ex-Drew Victory) T-AG 173
CHEYENNE (ex-Wyoming, ex-Middlesex Victory) T-AG 174
Displacement, tons 6 700 light; 2 400 full load
Dimensions, feet 455 x 62 x 64
Main engines Geared turbines; 6 000 shp = 15 5 knots

Forward depots in the Pacific. T-AG 172, 173, 174, were acquired in 1963 from the Maritime Administration. In the MSTs and designated USNS.

RESCINDED ACQUISITIONS. The twelve "Victory" ships planned as forward depot ships were not acquired from the Maritime Administration Reserve Fleet on 1 Feb 1966 as requested and redesignated T-AG 179 to 190 and given new Navy names (see complete list in the 1966-67 edition) but were chartered to and operated by commercial shipping companies in Vietnam service under their original "Victory" names.



CHEYENNE 1965, United States Navy, Official

2 Survey Support Type

SERGEANT CURTIS F. SHOUP T-AG 175
Displacement, tons 3 000 light; 7 410 full load
Dimensions, feet 339 x 50 x 21
Main engines Diesel; 1 750 bhp = 11 5 knots
Complement 49 (11 officers, 34 men, 4 survey personnel)

CI-M-AVI Type. Survey Support Ship. Navy Oceanographic Office, South West Pacific Survey. Rated as Auxiliary (AG). Same type as T-AG 169 and T-AG 171 above.

SHEARWATER (ex-FS 411) T-AG 177
Acquired from the US Army, and placed in service on 1 May 1964 for remote Pacific Islands Project. Same type as AKL.

FLYER (ex-SS American Flyer, ex-SS Water Witch) T-AG 178
Displacement, tons 7 360 light; 11 000 full load
Dimensions, feet 459 2 oa x 63 x 28
Main engines Turbines; 6 000 shp = 17 knots

Acquired from Maritime Administration on 9 Feb 1965 for Project "Caesar". C2-S-B1 type, USNS unarmed.

2 Experimental Research Type

GEORGE EASTMAN YAG 39 **GRANVILLE S. HALL** (ex-Iro Nelson Morris) YAG 40
Displacement, tons 6 000 light; 11 600 full load
Dimensions, feet 422 7 oa x 57 x 34 7 max
Main engines Steam reciprocating; 2 500 hp = 11 knots
Accommodation 19 officers, 150 men

Liberty ships of the EC-2-S-C1 type built in 1943-44, acquired by the Navy in 1952-53 as Experimental Minefield Sweepers. Several have been used as guinea-pig ships in sweeping minefields. Remote engine room controls on bridge. Helo platform forward. Replaced in service in 1962. Assigned their former merchant ship names in 1963. Now used as special project and research ships.

DISPOSALS
The experimental minefield sweeper YAG 37 (ex-John L. Sullivan) was scrapped in 1958. YAG 36 (ex-Floyd W. Spencer) and YAG 3B (ex-Edward Kavanagh) were stricken in 1960. The Fleet X-ray examination ship Whidbey AG 141, was stricken on 1 May 1959.

YACHTS

SEQUOIA AG 23
Displacement, tons 110 light
Dimensions, feet 105 x 21 x 5
Main engines 1 diesel; 400 bhp

Built in 1925 by J. H. Mathis Co. Used as flagship of the Secretary of the Navy. There are three other Navy yachts: **FREEDOM** (IX 43), **SALUDA** (IX 87, ex-Odyssey), **ROYONO** (IX 235). Highland Light (IX 48), was stricken on 1 Apr 1965 and later sold. The Presidential Yacht **HONEY FITZ**, 92 ft, is also Navy operated, but is laid up while not used by the President.

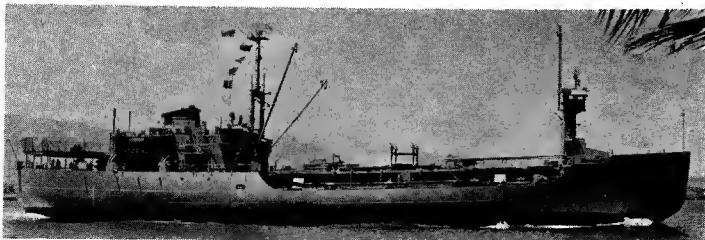
PETROL CARRIERS (AOG)

2 "Alatna" Class

ALATNA (6 Sep 1956) T-AOG 81 **CHATTAHOOCHEE** (4 Dec 1956) T-AOG 82

Displacement, tons 5 720
Measurement, tons 3 200 gross; 3 445 deadweight
Capacity 2 730 tons liquid cargo = 30 000 barrels
Dimensions, feet 285 5 pp, 302 oa x 16 x 19
Main engines Diesel-electric; 2 shafts; 3 400 hp = 12 knots

T1-MET-24a type. Built for MSTs by Bethlehem Steel, Staten Island, NY. Laid down on 16 Mar 1956 and 1 May 1956, respectively. Delivered in June and August 1957. Bows strengthened for navigation in ice. Equipped with helicopter flight deck. A photograph of Chattehoochee appears in the 1960-61 to 1966-67 editions.



ALATNA 1967, United States Navy, Official

4 "Peconic" Class

NODAWAY (ex-Belridge) T-AOG 78 **PISCATAQUA** (ex-Cisne) T-AOG 80
PETALUMA (ex-Raccon Bend) 79 **RINCON** 77

Displacement, tons 2 060 light; 6 000 full load
Dimensions, feet 325 oa x 48 x 19 max
Main engines Diesel; 1 shaft; 1 400 bhp = 10 knots
Capacity, 30 000 barrels
Merchant crew 33

T1-M-BT2 design. Assigned to MSTs and are USNS, unarmed. All built by Todd, Houston. Nodaway was reacquired from the Maritime Administration in 1965.

TRANSFERS. Tonti AOG 76, of this class was transferred to Colombia in 1965.

DISPOSALS. Peconic AOG 68, was transferred to Maritime Administration in 1960.



PETALUMA 1964, United States Navy, Official

10 "Patapsco" Class

	AOG		AOG		
CHEWAUCAN	50	22 July 1944	NESPELEN	55	10 Apr 1945
ELKHORN	7	15 May 1943	NOXUBEE	56	3 Apr 1945
GENESEE	8	23 Sep 1943	PATAPSCO	1	18 Aug 1942
KISHWAUKEE	9	24 July 1943	PINNEBOG	58	12 May 1945 (USAF)
MATTABESSET	52	11 Nov 1944	TOMBIGBEE	11	18 Nov 1943

Displacement, tons 1 850 light; 4 570 full load
Dimensions, feet 292 wl; 310 8 oa x 48 5 x 15 7 max
Guns 3-3 in dp, 50 cal
Main engines Diesel-electric; 2 shafts; 3 100 bhp = 14 knots
Complement 81 (6 officers, 75 men)

Launch dates above. Navy designed. All built by Cargill Inc, Savage, Minnesota. Kishwaukee, Noxubee and Patapsco were reacquired from the Maritime Administration and recommissioned in 1966.

PHOTOGRAPHS. A photograph of Mattabeset appears in the 1962-63 to 1964-65 editions.

DISPOSALS
Maquoketa T-AOG 51 was stricken, Kern AOG 2, Webash AOG 4, and Maquoketa AOG 51 were transferred to Maritime Administration in 1958 and Susquehanna AOG 5 in 1959-60. Ontonagon AOG 36 was stricken from the Navy List and returned to Maritime Administration on 13 Nov 1957. Agawam AOG 6, Namasket AOG 10, and Rio Grande AOG 3 were disposed of in 1961. Chestetee AOG 49 and Wacissa AOG 59 were stricken in 1963 and scrapped.

TRANSFER. Natchoug AOG 54 was transferred to Greece under the MDAP on 1-Aug 1959. Pinnebog is on loan to the US Air Force, Pecos AOG 57 was transferred to Taiwan China in Apr 1962. Namakagon AOG 53 was loaned to New Zealand in 1963.



CHEWAUCAN

1965, Dr Giorgio Arre

FLEET OILERS (AO)

AMERICAN EXPLORER T-AO 165
Measurement, tons 16 600 gross; 22 525 deadweight
Dimensions, feet 615 oa x 80 x 44.5
Main engines Steam turbines; 22 000 shp = 20 knots

T5-S-RM2a type. Laid down on 9 July 1957. Launched on 11 Apr 1958. Built by Ingalls Shipbuilding Corporation, Pascagola, for the Maritime Administration, but acquired by MSTs. Rated as US Naval Ship with civil service crew.



AMERICAN EXPLORER 1961, United States Navy, Official

MAUMEE (16 Feb 1956) T-AO 149 **SHOSHONE** (17 Jan 1957) T-AO 151
YUKON (16 Mar 1956) T-AO 152

Displacement, tons 7 950 light
Measurement, tons 16 500 gross; 25 000 deadweight
Dimensions, feet 591 wl; 620 oa x 83.5 x 32
Main engines Turbine; 20 460 shp = 18 knots

Yukon, laid down 16 May 1955 by Ingalls, Pascagoula, delivered May 1957. *Maumee* laid down 8 Mar 1955, delivered Dec 1956. *Shoshone* laid down 15 Aug 1955 by Sun Shipbuilding, Chester, delivered Apr 1957. T5-S-12A type. *Potomac* T-AO 150 sank at Morehead, NC, after explosion on 26-27 Sep 1961, but was rebuilt in 1963-64 and renamed *SS Shenandoah* chartered to MSTs. A photograph of *Maumee* appears in the 1962-63 and 1963-64 editions.



SHOSHONE 1964, United States Navy, Official

NEOSHO AO 143 10 Nov 1953	KAWISHIWI AO 146 11 Dec 1954
MISSISSINAWA 144 12 June 1954	TRUCKEE 147 10 Mar 1955
HASSAYAMPA 145 12 Sep 1954	PONCHATOULA 148 9 July 1955

Displacement, tons 11 600 light; 38 000 to 40 000 full load
Dimensions, feet 640 wl; 655 oa x 86 x 35 max
Guns 12-3 in, 50 cal (6 twin)
Main engines GE Turbines; 2 shafts; 28 000 shp = 20 knots
Complement 300 (fitters to carry squadron staff of 12 officers)

AO 143, built by Bethlehem Steel Company, Quincy, Mass, AO 144-148 by New York Shipbuilding Corporation, Camden, New Jersey. *Mississinewa* commissioned 18 Jan 1955. Launch dates above. *Truckee* laid down 21 Dec 1953. *Ponchatoula* 1 Mar 1964. Largest Navy oilers built. Carry 180 000 barrels in 24 tanks. The 2-5 inch, 38 cal guns were removed in 1960. A helicopter platform laid on in place of the after 5 inch gun in 143, 144, 147. A photograph of *Neosho* appears in the 1955-56 to 1959-60 editions, of *Truckee* in 1960-61 to 1963-64 editions.



PONCHATOULA 1967, courtesy Hiroyuki Otani

5 "T3-S2-A3" Type (Jumboised)

MISPELLION AO 105 10 Aug 1945	PASSUMPSIC AO 107 31 Oct 1945
NAVASOTA 106 30 Aug 1945	PAWCATUCK 108 19 Feb 1945
	WACCAMAW 109 30 Mar 1946

Displacement, tons 11 000 light; 34 750 full load
Dimensions, feet 646 oa x 75 x 35.5
Guns 4-3 in, 50 cal AA (single)
Main engines Turbines; 2 shafts; 13 500 shp = 16 knots
Boilers 4
Complement 290 (16 officers, 274 men)

Navasota and *Waccamaw*, jumboised under the 1963 programme, (recommissioned on 28 Dec 1964 and 26 Feb 1965), other three under the 1964 programme. Conversion increased the oil cargo capacity from 100 000 to 150 000 barrels.



PAWCATUCK 1962, Stefan Tarzibaschitsch

16 "T2-SE" Type

CACHE (ex- <i>Stillwater</i> 1942)	T-AO 67	MISSION SANTA YNEX	T-AO 134
CHEPACHET (ex- <i>Eutaw Springs</i> , 1943)	78	PECOS (ex- <i>Corsicana</i> , 1942)	65
COSSATOT (ex- <i>Fort Necessity</i> , 1942)	77	PIONEER VALLEY	140
COWANESQUE (ex- <i>Fort Duquesne</i> , 1942)	79	SAUGATUCK (ex- <i>Newton</i> , 1942)	75
MISSION BUENAVENTURA	111	SCHUYLKILL (ex- <i>Louisburg</i> , 1943)	76
MILlicoma (ex- <i>Conastoga</i> , 1943)	73	SHAWNEE TRAIL	142
MISSION SAN RAFAEL	130	SUAMICO (ex- <i>Harlem Heights</i> , 1941)	49
MISSION SANTA CRUZ	133	TALLUAH (ex- <i>Valley Forge</i> , 1944)	50

Displacement, tons 5 730 light; 22 380 full load
Dimensions, feet 503 wl; 523.5 oa x 68 x 31
Main engines A 1 type Turbo-electric; 6 000 shp = 15 knots
A 2 type; 1 000 shp = 16 knots
Boilers 2 Babcock & Wilcox

T2-S E-A1 and T2-S E-A2 design. All assigned to Military Sea Transportation Service with the prefix USNS (US Naval Ship). Civilian manned. Navy-owned tankers, operated by commercial shipping firms under contract to the Navy. Several are equipped with an aluminium portable aircraft cargo deck. *Mission Santa Clara* T-AO 132, was loaned to Pakistan in Jan 1963. *Shawnee Trail* T-OA 142 was reacquired from Maritime Administration on 20 Jan 1965 to replace *Mission San Antonio* which was stricken. CONVERSION. *Mission Capistrano* AO 112, converted into a sound testing experimental ship (see earlier page). Six T-2 type were to be enlarged to 585 x 80 feet and 30 000 tons displacement under the FY 1965, 1966, 1967 conversion programmes.



MISSION SAN RAFAEL 1966, Skyfotos

24 "T3-S2-A1" Type

ALLAGASH AO 97 14 Apr 1945	GUADALUPE AO 32 1940
ASHTABULA 51 22 May 1943	(ex- <i>Esso Raleigh</i>)
AUCILLA (ex- <i>Escanaba</i>) 56 20 Nov 1943	KASKASKIA (ex- <i>Esso Richmond</i>) 27 1939
CACAPON 52 6 June 1943	MANATEE 58 19 Feb 1944
CALIENTE 53 26 Aug 1943	MARIAS 57 21 Dec 1943
CALOOSAHATCHEE 88 1945	NANTAHALA 60 1943
CANISTEO 99 6 July 1945	PLATTE 24 8 July 1939
CHEMUNG (ex- <i>Esso Annapolis</i>) 30 9 Sep 1939	SABINE (ex- <i>Esso Albany</i>) 25 27 Apr 1940
CHIKASKIA 54 2 Oct 1943	SALAMONIE (ex- <i>Esso Columbia</i>) 26 1940
CHIPOLA 63 21 Oct 1944	SEVERN 61 31 May 1944
CHUKAWAN 100 28 Aug 1945	TALUGA 62 10 July 1944
CIMARRON 22 7 Jan 1939	TOLOVANA 64 6 Jan 1945
ELOKOMIN 55 19 Oct 1943	

Displacement, tons 25 525 full load; Jumboised ships 34 700 full load
Dimensions, feet 553 or 644 oa x 75 x 31.5
Guns 1-5 in; 4-3 in (*Chemung*, *Guadalupe*, *Kaskaskia*, *Sabine*, *Cimarron*, *Platte*, *Salamonie*, 3-5 in; *Cacapon*, 4-3 in, 50 cal; *Chipola*, *Guadalupe*, 2-3 in, 50 cal).
8-3 in (4 twin) in Jumbos
Main engines Geared turbines; 2 shafts; 13 500 shp = 18 knots
Boilers 4 Foster-Wheeler (*Cimarron*, 4 Babcock & Wilcox)
Complement 64

War Losses: *Mississinewa*, *Neosho*. Nine of this class, including *Ashtabula*, *Caloosahatchee* and *Canisteo*, are being "Jumboised" and re-armed with 8-3 inch, 50 cal guns in 4 twin mounts, two forward and two aft. A new central tank section will increase the length to 644 feet and the displacement to 34 700 tons.



ELOKOMIN 1962, courtesy E. Wood, Esq

4 "T2-A" Type

KANKAKEE (ex- <i>Colina</i> , 1941)	AO 39	MATTAPONI (ex- <i>Kalkay</i> , 1942)	AO 41
KENNEBEC (ex- <i>Corsicana</i> , 1940)	36	NECHES (ex- <i>Askal</i> , 1941)	47
		TAPPAHANNOCK (ex- <i>Jorkay</i> , 1942)	43

Displacement, tons 6 013 light; 21 850 full load
Dimensions, feet 502 oa x 68 x 30.8 max
Guns 2 or 4-3 in, 50 cal single
Main engines Turbine; 1 shaft; 12 000 shp = 16.7 knots
Boilers 2 Babcock & Wilcox

Tappahannock was reacquired from Maritime Administration and recommissioned 1965-66. A photograph of *Kennebec* appears in the 1949-50 to 1957-58 editions, and of *Mattaponi* in the 1957-58 to 1960 61 editions.

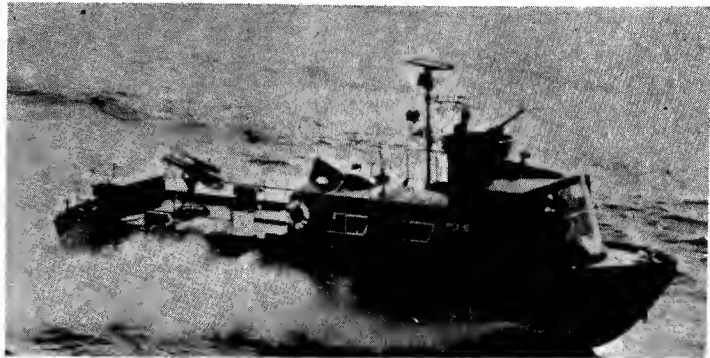
DISPOSALS
"T3-S-A1" type. *Enoree* AO 69 and *Niobrara* AO 72 were stricken in Dec 1958. "T2-A" type. *Merrimack* AO 37 and *Monagahela* AO 42 were stricken in Dec 1958. Distilling ships, ex-oilers, of the "Pasig" class *Abatan* AW 4 (ex-*Mission San Lorenzo* AO 92 and *Pasig* AW 3 (ex-*Mission San Xavier* AO 91) transferred to the Maritime National Defence Reserve Fleet in 1960-61, but *Abatan* was reacquired in Sep 1962 and returned to Maritime Administration in Nov 1962, (now at Guantanamo Bay, Cuba, in service status with the distilling plant activated).

FAST PATROL CRAFT (PCF)

95 "Swifts" (PCF 1-104 Series)

Displacement, tons	22
Dimensions, feet	50 x 15 x 4
Guns	1-3.2 in mortar; 3-50 cal MG (twin 50 cal MG in tub over pilot house, combined over and under mount aft of 50 cal MG and 81 mm mortar)
Main engines	2 GM V 12 diesels; 2 shafts; 960 bhp = 28 knots
Complement	6 (1 officer, 5 men). Three crews for every two boats, one relieved after every patrol

"Swift" boats. 50 original plus 54 additional from Sewart Seacraft Inc, Berwick, La. Built in 1965-66 for use in petrol operations along the Vietnamese coast. Aluminium hull. PCF 4 was mined and sunk off South Vietnam on 14 Feb 1966. PCF 41 was sunk off Vietnam on 22 May 1966. PCF 77 swamped and sunk off South Vietnam in Nov 1966. PCF 33, 34, 83, 24, 85, 86 were transferred to Philippines in 1966.



PCF B 1966, courtesy Mr W. H. Davis

RIVER PATROL BOATS (PBR)

156 "Plastics" (PBR 1-160 Series) + 80

Dimensions, feet	31 x 12.5 x 3
Guns	2-50 cal MG (1 twin) forward; 1-30 cal MG aft; 1-40 mm grenade launcher
Main engines	2 GM V6 diesels; 440 bhp = over 25 knots
Complement	4

"Plastic" boats. 160 of one class built by United Boat Builders, Bellingham, Washington, between Dec 1965 and Apr 1966. Fibreglass hull. Weight 7 tons with crew and equipment. Water-jet propulsion system. No propeller or rudder. For use in Vietnam. PBR 20 sunk in collision, 8 Mar 1967, PBR 30 and PBR 55 stricken after severe damage Jan 1967 and Nov 1966, PBR 113 destroyed after grenade damage 3 Feb 1967, all off South Vietnam.



PBR 2 1966, courtesy Mr W. H. Davis

SALVAGE TUG (ATS)

3 New Construction

ATS 1 ATS 2 ATS 3

Prototype ATS 1 salvage tug in 1966 Shipbuilding Programme, building by Brooke Marine, Lowestoft, England. 2 650 tons displacement, 285 x 48 feet

AUXILIARY OCEAN TUGS (ATA)

18 "Maricopa" Class

ACCOKEEK	ATA 181	KOKA	ATA 185	STALLION	ATA 193
ALLEGHENY	ATA 179	MAHOPAC	ATA 196	SUNNADIN	ATA 197
CAHOKIA	ATA 186	PENOBSCOT	ATA 188	TATNUCK	ATA 195
CATAWBA	ATA 210	SAGAMORE	ATA 208	TILLAMOOK	ATA 192
KALMIA	ATA 184	SALISH	ATA 187	UMPQUA	ATA 209
KEYWADIN	ATA 213	SAMOSSET	ATA 190	WANDANK	ATA 204
Displacement, tons	534 standard; 835 full load				
Dimensions, feet	134.5 wl; 143 oa x 33.9 x 13				
Main engines	2 GM diesel-electric; 1 shaft; 1 500 bhp = 13 knots				
Complement	45 (5 officers, 40 men)				

Ex-ATRs (Ocean Rescue Tugs). All launched in 1943-45. *Bagaduce* was transferred to the US Coast Guard in 1959, and *Wampanoag* in 1959, *Algorme* ATA 212, *Challenge* ATA 201, *Geronimo* ATA 207, *Iuka* ATA 123, *Navejo* ATA 211, *Navigator* ATA 203, *Nottoway* ATA 183, *Reindeer* ATA 189, *Sciota* ATA 205, *Sonoma* ATA 175, *Tunica* ATA 178, *Tuscarora* ATA 245, (ex-YTB 341), *Unadilla* ATA 182 and *Undanted* ATA 199, to the Maritime Administration National Defence Reserve Fleet in 1962. *Wateree* ATA 174 to Peru in Nov 1961. *Keosauque* ATA 198 and *Pinole* ATA 206 to Korea on 1 Feb 1962. *Tenkawa* ATA 176 to Taiwan China on 5 Apr 1962, *Geromino* ATA 207 to US Fish and Wild Life Service, *Sotoyomo* ATA 121, to Mexico in July 1963. *Undanted* ATA 199 to Bureau of Commercial Fisheries in July 1964. *Allegheny* is employed in oceanographic research for Office of Naval Research. Guns and towing gear removed, and fitted with after deckhouse.

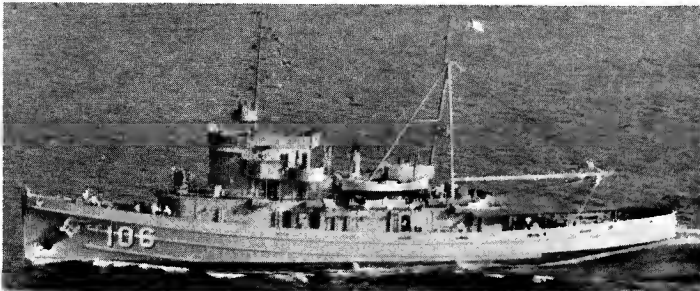
FLEET OCEAN TUGS (ATF)

29 "Apache" Class

	ATF	Launched		ATF	Launched
ABNAKI	96	22 Apr 1943	MOSOSPELEA	158	7 Mar 1945
APACHE	67	8 May 1942	MUNSEE	107	21 Jan 1943
ARIKARA	98	22 June 1943	NIPMUC	157	12 Apr 1945
ATAKAPA	149	11 July 1944	PAIUTE	159	4 June 1945
CHOWANOC	100	20 Aug 1943	PAPAGO	160	21 June 1945
COCOPA	101	5 Oct 1943	QUAPAW	110	15 May 1943
CREE	84	17 Aug 1942	SALINAN	161	20 July 1945
HITCHITI	103	29 Jan 1944	SENECA	91	2 Feb 1943
KIOWA	72	5 Nov 1942	SHAKORI	162	9 Aug 1945
LIPAN	85	17 Sep 1942	SIOUX	75	27 May 1942
LUISENO	156	17 Mar 1945	TAKELMA	113	18 Sep 1943
MATACO	86	14 Oct 1942	TAWAKONI	114	28 Oct 1943
MOCTOBI	105	25 Mar 1944	TAWASA	92	22 Feb 1943
MOLALA	106	23 Dec 1942	UTE	76	24 June 1942
			UTINA	163	31 Aug 1945
Displacement, tons	1 235 standard; 1 675 full load				
Dimensions, feet	195 wl; 205 oa x 38.5 x 15.5 max				
Guns	1-3 in, 50 cal dp				
Main engines	4 diesels, electric drive; 3 000 bhp = 15 knots				
Complement	85				

Launch dates above. Fitted with powerful pumps and other salvage equipment. *Wateree* ATF 117 lost, *Sarsi* ATF 111 sank after striking a mine off Korea, 22 Aug 1952. *Chippewa* ATF 69, *Moreno* ATF 87, *Narragansett* ATF 88, *Achomawi* ATF 148, *Aksa* ATF 97, *Pawnee* ATF 74, *Tenino* ATF 115 and *Wenatchee* ATF 118 were stricken in 1961 and *Carib* ATF 82, *Chawasha* ATF 181, *Chimarko* ATF 154, *Hidatsa* ATF 102, *Hopi* ATF 71, *Icarilla* ATF 104, and *Pakana* ATF 108 in 1963. *Avovel* and *Chilula* were transferred to the Coast Guard in 1956. *Luiseno* and *Papego* are fitted as submarine rescue vessels. *Serrano* ATF 112 was reclassified as survey ship, AGS 24. *Yuma* ATF 94 was transferred to Pakistan on 25 Mar 1959. *Tekesta* ATF 93 to Chile in 1960, *Cusabo* ATF 155 to Ecuador in 1960, *Choctaw* ATF 70 to Columbia in 1961, *Menominee* ATF 73 to Indonesia in 1961, *Pinto* ATF 90 to Peru in 1961, *Arapahoe* ATF 68 and *Cahuilla* ATF 152 to Argentina in 1961, *Tolowa* ATF 116 to Venezuela in Feb 1962, *Potawatomi* ATF 109 to Chile in 1963, *Bannock* ATF B1 to Italy in 1954, *Chickasaw* ATF 83, to Taiwan in 1966.

A photograph of *Sioux* appears in the 1950-51 to 1957-58 editions, of *Luiseno* in the 1958-59 to 1964-65 editions, of *Mosopelea* in the 1965-66 and 1966-67 editions.



MOLALA (no funnel type) 1967, United States Navy, Official



KIOWA 1966, A. & J. Pavie

ATA 240 (ex-US Army LT 455)

Displacement, tons	534 standard; 835 full load
Dimensions, feet	143 oa x 33.3 x 13.9 max
Main engines	Diesel-electric; 1 500 bhp = 13 knots

T-ATA 239 (ex-LT 532) was returned to US Army. T-ATA 244 (ex-LT 156) was stricken on 1 Nov 1959. T-ATA 241 (ex-LT 60), T-ATA 242 (ex-LT 132) and T-ATA 243 (ex-LT 646) were transferred to Maritime Administration in 1962.

Large Harbour Tugs (YTB) 40 "Natic-Edenshaw" Classes

Displacement, tons	400
Dimensions, feet	108 x 28
Main engines	Diesel; 1 800 shp = 14 knots. Controllable pitch propellers.

Built by Christy Corp, Sturgeon Bay, Wis. Steel hulled. Nos YTB 752, 753, 756 to 773. YTB 752 (named *Edenshaw*) was completed in 1960. YTB 753 (named *Marin*) was launched on 22 Apr 1960. YTB 756-759, *Bogelusa*, *Puducan*, *Pontiac*, and *Oshkosh* completed in 1961, are of 356 tons and 103 feet oa. Another YTB of 256 tons in the Fiscal Year 1960 programme, YTB 760, 761, 762 in 1961 Programme, 434 tons, 109 x 30 feet, crew 12, YTB 763-766 in the 1962 Programme, YTB 767-773 in 1963 programme, 774-781 in 1964 programme, YTB 782-789 in 1965 programme. Total in service 37 (YTB 287-781). The "Mascoutan" class, 205 tons, 85 ft have two vertical axis controllable pitch propellers.

Medium Harbour Tugs (YTM)

There are 155 Medium Harbour Tugs. YMT 128-779, from 91 feet in length.

Small Harbour Tugs (YTL)

There are 42 Small Harbour Tugs. 422-756, ranging from 66 to 83 feet.

UNITED STATES COAST GUARD

Administration

Commandant, United States Coast Guard: Admiral Willard J. Smith
Assistant Commandant, USCG: Vice-Admiral Paul E. Trimble
Chief of Staff of the Coast Guard: Rear-Admiral Mark A. Whalen
Superintendent of US CG Academy: Rear-Admiral Chester R. Bender

Personnel

1964 Fiscal Year: Authorised Strength: 31,959 officers and men
 1965 Fiscal Year: Authorised Strength: 31,798 officers and men
 1966 Fiscal Year: Authorised Strength: 32,519 officers and men
 1967 Fiscal Year: Authorised Strength: 34,546 officers and men

I.—ESTABLISHMENT

The United States Coast Guard was established by the Act of Congress approved January 28, 1915, which consolidated the Revenue Cutter Service founded in 1790 and the Life Saving Service founded in 1878.

The act of establishment as amended provides (Title 14, US Code, Part 1, Sect 1; "The Coast Guard as established January 28, 1915, shall be a military service and a branch of the armed forces of the United States at all times. The Coast Guard shall be a service in the Treasury Department, except when operating as a service in the Navy." (The Coast Guard was transferred to the Department of Transportation on 1 Mar 1967)).

The Lighthouse Service, founded in 1789, was transferred to the Coast Guard on July 1, 1939, as a result of the President's Reorganization Plan No. II.

On February 28, 1942, the President transferred temporarily from the Secretary of Commerce to the Treasury Department certain safety-at-sea functions of the former Bureau of Marine Inspection and Navigation. These duties were delegated to the Coast Guard. The President's Reorganization Plan III, which became effective July 16, 1946 made this temporary transfer of functions permanent.

II.—DUTIES

1. The peacetime duties of the Coast Guard have as their principal objective safety and security at sea through enforcement of the navigation laws, saving life and assistance to vessels in distress, maintenance of aids to navigation, marine inspection, and oceanography.

2. Law enforcement duties, performed for all departments of the government, include those relating to customs, movements and anchorage of vessels, immigration, quarantine, neutrality, navigation and other laws governing merchant vessels and motor boats, safety of life on navigable waters during regattas, oil pollution, sponge fisheries, protection of game, seal and fisheries in Alaska, protection of bird reservations established by Executive Order and suppression of mutinies.

3. Life saving and assistance duties include maintenance of coastal stations and communication lines on the continental coasts of the United States, conduct of the International Ice Patrol, icebreaking, weather patrol, derelict destruction, winter cruising on the Atlantic coast, extension of medical aid to fishing vessels, Alaska Patrol and flood relief work. In its humanitarian duties the Coast Guard renders aid and assistance to vessels and aircraft in distress irrespective of nationality and extends its protection, if needed, to all shipping within the scope of its operations.

4. The Coast Guard maintains more than 42,000 navigation aids, consisting of lighthouses, lightships, off-shore light structures, radio beacons, buoys, radar beacons, world-wide loran, and unlighted beacons on the sea and lake coasts of the United States, on the rivers of the United States, and on the coasts of all other territory under United States jurisdiction, with the exception of Panama.

DUTIES—continued

5. In time of national emergency or when the President so directs the Coast Guard operates as a part of the Navy.

A military organization was adopted at the time the service was established in 1790, after the dissolution of the Revolutionary Navy. This organization has been continued since that date for the purpose of maintaining the general efficiency of the operation of the service in its law enforcement duties in time of peace.

The executive direction under which the Coast Guard operates as a part of the Navy in time of war is similar in effect to a measure of mobilization. In this respect the Coast Guard is a potential reserve force for the Navy.

No personnel are normally assigned or equipped as land troops. Vessels are prepared in emergencies to equip landing forces with small arms and machine guns; stations are similarly prepared to undertake emergency police duties in a more limited sense, because of the smaller units involved but in both cases these duties would be incidental to the primary purpose of the service, the enforcement of law on the high seas and navigable waters of the United States and the saving of life and property.

III.—ORGANIZATION

For the administration and operation of the Coast Guard, the United States, including its territories and insular possessions and the waters adjacent thereto are divided into 12 districts. These are grouped into two area commands. The EASTERN AREA includes the Atlantic and Gulf Coasts. The WESTERN AREA includes the Pacific. Heading the Coast Guard is the Commandant in Washington, DC.

IV.—PERSONNEL

Uniforms of officers and men are similar to those of US Navy, but commissioned officers wear a gold shield on the sleeve instead of a star, and cap device is a gold spread-eagle, the talons grasping a horizontal foul anchor. A silver shield is mounted on the eagle's breast. Enlisted men and women of the Coast Guard wear a shield on the lower right sleeve.

V.—VESSELS

Coast Guard vessels are designated Coast Guard cutters. Those of 110 feet tug type and below are detailed to the larger maritime ports to enforce Customs and Navigation laws and the regulation of the anchorage and movement of vessels.

Eight Polar icebreakers and 34 high endurance cutters refitted with new oceanographic equipment to improve their ability to perform sea studies in consonance with other duties.

VI.—AVIATION

Major air stations in commission number eleven. Location: Salem, Mass; Brooklyn, NY; Miami, Fla; St Petersburg, Fla; San Diego, California; Port Angeles, Washington; Elizabeth City, NC; San Francisco, California; Traverse City, Michigan; Barbers Point, Oahu, Hawaii; Annette, Alaska. There are also 16 small air stations in the continental US, Bermuda, Puerto Rico, Hawaii, Alaska, Guam, Philippines and Italy.

HIGH ENDURANCE CUTTERS (WHEC)

9 New Construction. 378 Class

	No.	Launched
BOUTWELL	WHEC 719	17 June 1967
CHASE	WHEC 718	20 May 1967
DALLAS	WHEC 716	10 Oct 1966
GALLATIN	WHEC 721	
HAMILTON	WHEC 715	18 Dec 1965
MELLON	WHEC 717	11 Feb 1967
MORGANTHAU	WHEC 722	
RUSH	WHEC 723	
SHERMAN	WHEC 720	

Displacement, tons	2 716 standard; 3 050 full load
Dimensions, feet	350 wl; 378 oa x 42 x 20
Guns	1—5 in, 38 cal; 2—81 mm mortars; 2—50 cal MG tubes
A/S weapons	2 Hedgehogs; Mk 33 torpedo tubes
Aircraft	2—HH 52A helicopters
Main engines	2 Fairbanks Morse diesels, 2 Pratt & Whitney gas turbines; 2 shafts; 30 600 shp = 29 knots
Radius, miles	11 500 at 20 knots, cruising; 3 000 at 25 knots with gas turbines
Complement	15 officers, 185 men

Hamilton is the prototype high endurance cutter of the new construction programme. Helicopter deck aft. Supplies for 40 days at sea. Creeping engine for a speed of about three knots for station keeping. All built by Avondale Shipyards Inc at a cost of \$10 151 000 each. *Hamilton* commissioned on 18 Mar 1967. Two controllable pitch propellers, 13 ft dia. Bow thruster propeller. Engine control and propeller pitch control console on navigation bridge, either bridge wing station or the engine room control booth. Aluminium super-



HAMILTON (as completed)

1967. United States Coast Guard, Official.

structure. Anti-well tanks. She is the longest Coast Guard cutter on record. The Coast Guard put 36 000 hp into propulsion machinery of half the weight used in the Service's present 6 000 hp vessels. Operating on diesel power alone, the new cutter has a cruising speed of 20 knots. On gas turbine power she clips the water at a top speed of 29 knots. Her design features a helicopter flight deck, forward of which are twin exhaust stacks abreast the mainmast which holds radar antenna and other electronic gear. The new cutter is

equipped with communications facilities of more modern and greater capacity than in use now, a large oceanographic laboratory, and modments for gathering weather data. Her rescue equipment includes gas turbine powered motor lifeboats. Planned total of 33 ships of this class in next 10 years *Boutwell*, *Chase*, *Mellon* laid down on 3 Dec, 15 Oct and 25 July 1966, respectively. An illustration of the former design with twin main "macks" or combined masts and stacks, appears in the 1963-64 to 1965-66 editions.

6 "Campbell" (327) Class

Displacement, tons	2 216 standard; 2 785 full load
Dimensions, feet	308 wl; 327 oa x 41 x 15
Guns	1—5 in, 38 cal, 2—40 mm AA
A/S weapons	Hedgehog; K mortars
Main engines	Westinghouse geared turbines; 2 shafts; 6 200 shp = 20.5 knots
Boilers	2 Babcock & Wilcox
Oil fuel, tons	572
Radius, miles	8 000 at 12.5 knots; 12 300 at 11 knots
Complement	202

Rated as 327 ft Cutters. Employed as ocean station ships. All built by Philadelphia Navy Yard except *Bibb* by Charleston Navy Yard and *Spencer* by New York Navy Yard. Named after former Secretaries of the Treasury. Second World War loss: —*Alexander Hamilton* WPG 34.

GUNNERY. All originally mounted two 5-inch guns. The 20 mm AA guns were removed in 1957. The 40 mm AA guns are to be replaced by 50 cal machine guns.

PHOTOGRAPHS. A port bow oblique aerial view of *Taney* appears in the 1956-57 to 1960-61 editions, and a port broadside view of *Campbell* before alteration in the 1961-62 to 1964-65 editions.

Name	No.
BIBB (ex-George M. Bibb)	WHEC 31
CAMPBELL (ex-George W. Campbell)	WHEC 32
DUANE (ex-William J. Duane)	WHEC 33
INGHAM (ex-Samuel D. Ingham)	WHEC 35
SPENCER (ex-John C. Spencer)	WHEC 36
TANEY (ex-Roger B. Taney)	WHEC 37

Launched	Completed
14 Jan 1937	19 Mar 1937
3 June 1936	22 Oct 1936
3 June 1936	16 Oct 1936
3 June 1936	6 Nov 1936
6 Jan 1936	13 May 1937
3 June 1936	19 Dec 1936



CAMPBELL

1965, United States Coast Guard, Official

12 "Owasco" (255) Class

Displacement, tons	1 563 standard; 1 913 full load.
Dimensions, feet	254 oa x 43 x 17
Guns	1—5 in, 38 cal; 4—40 mm AA
A/S weapons	Hedgehog, mortars
Main engines	Westinghouse geared turbines; electric drive; 4 000 shp = 18.4 knots
Boilers	2
Oil fuel, tons	350
Radius, miles	14 800 at 11 knots
Complement	140

Rated as 255 ft Cutters. Employed as ocean station ships. All built by Western Pipe & Steel Co, except *Mendota* and *Pontchartrain*, by Coast Guard Shipyard. Named after Indian tribes. *Klamath*, *Wachusett* and *Winnebago* fitted with oceanographic research equipment. Designation of all ships on this page changed from WPG to WHEC on 1 May 1966.

GUNNERY. The 20 mm AA guns and depth charge racks were removed in 1957. The 40 mm AA guns are to be replaced by 50 cal machine guns.

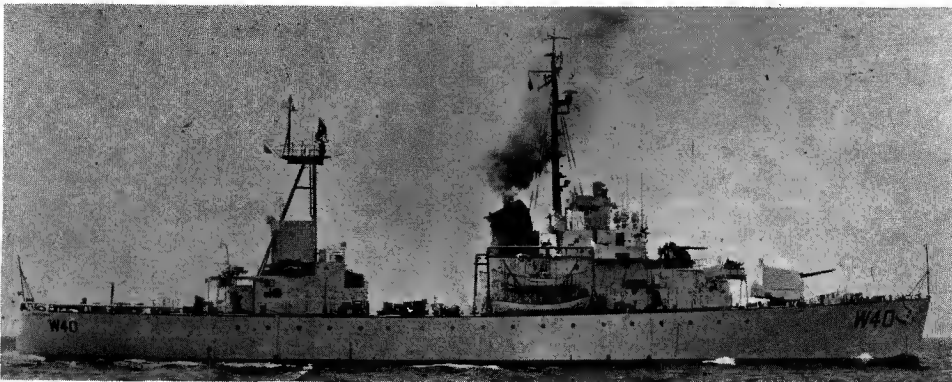
ANTI-SUBMARINE. A/S weapons were re-installed in 1950. *Winona* and others were in 1965 equipped with AS torpedo launchers.

PHOTOGRAPHS. A starboard broadside surface view of *Sebago* appears in the 1955-56 to 1960-61 editions, and a starboard broadside aerial view of *Chautauqua* in the 1961-62 to 1964-65 editions.

DISPOSAL
Iroquois WPG 43 was disposed of in 1965.

Name	No.
ANDROSCOGGIN	WHEC 68
CHAUTAUQUA	WHEC 41
ESCANABA (ex-Otsego)	WHEC 64
KLAMATH	WHEC 66
MENDOTA	WHEC 69
MINNETONKA (ex-Sunapea)	WHEC 67
OWASCO	WHEC 39
PONTCHARTRAIN (ex-Okeechobee)	WHEC 70
SEBAGO (ex-Wachusett)	WHEC 42
WACHUSETT (ex-Huron)	WHEC 44
WINNEBAGO	WHEC 40
WINONA	WHEC 65

Launched	Completed
16 Sep 1945	20 Sep 1946
14 May 1944	4 Aug 1945
25 Mar 1945	20 Mar 1946
2 Sep 1945	5 Sep 1946
29 Feb 1944	2 June 1946
21 Nov 1945	20 Sep 1946
18 June 1944	18 May 1945
29 Apr 1944	28 July 1945
28 May 1944	20 Sep 1945
5 Nov 1944	23 Mar 1946
2 July 1944	21 June 1945
22 Apr 1945	15 Aug 1946



WINNEBAGO

1965, United States Coast Guard, Official

High Endurance Cutters (WHEC)— continued

Name	No.	Builders	Launched	Completed
ABSECON (ex- <i>AVP</i> 23)	WHEC 374	Lake Washington Shipyard	8 Mar 1942	1942
BARATARIA (ex- <i>AVP</i> 33)	WHEC 381	Lake Washington Shipyard	2 Oct 1943	1944
BERING STRAIT (ex- <i>AVP</i> 34)	WHEC 382	Lake Washington Shipyard	15 Jan 1944	1944
CASCO (ex- <i>AVP</i> 12)	WHEC 370	Puget Sound Naval Shipyard	15 Nov 1941	1942
CASTLE ROCK (ex- <i>AVP</i> 36)	WHEC 383	Lake Washington Shipyard	11 Mar 1944	1944
CHINCOTEAGUE (ex- <i>AVP</i> 24)	WHEC 375	Lake Washington Shipyard	15 Apr 1942	1942
COOK INLET (ex- <i>AVP</i> 36)	WHEC 384	Lake Washington Shipyard	13 May 1944	1944
COOS BAY (ex- <i>AVP</i> 25)	WHEC 376	Lake Washington Shipyard	15 May 1942	1942
DEXTER (ex- <i>Biscayne</i> , <i>AGC</i> 18, ex- <i>AVP</i> 11)	WHEC 385	Puget Sound Naval Shipyard	15 Nov 1941	1941
GRESHAM (ex- <i>Willoughby</i> , ex- <i>AGP</i> 9, ex- <i>AVP</i> 57)	WHEC 387	Lake Washington Shipyard	21 Aug 1942	1944
HALF MOON (ex- <i>AVP</i> 26)	WHEC 378	Lake Washington Shipyard	12 July 1942	1942
HUMBOLDT (ex- <i>AVP</i> 21)	WHEC 372	Boston Naval Shipyard	17 Mar 1941	1941
MCCULLOCH (ex- <i>Wachepreague</i> , ex- <i>AGP</i> 8, ex- <i>AVP</i> 56)	WHEC 386	Lake Washington Shipyard	10 July 1942	1944
MACKINAC (ex- <i>AVP</i> 13)	WHEC 371	Puget Sound Naval Shipyard	15 Nov 1941	1942
MATAGORDA (ex- <i>AVP</i> 22)	WHEC 373	Boston Naval Shipyard	18 Mar 1941	1941
ROCKAWAY (ex- <i>AVP</i> 29)	WHEC 377	Associated Shipbuilders	14 Feb 1942	1942
UNIMAK (ex- <i>AVP</i> 31)	WHEC 379	Associated Shipbuilders	27 May 1942	1942
YAKUTAT (ex- <i>AVP</i> 32)	WHEC 380	Associated Shipbuilders	2 July 1942	1942

18 "Casco" (311) Class
Former Navy Seaplane Tenders

Displacement, tons	1 766 standard, 2 800 full load
Dimensions, feet	311 oa x 41 x 14
Guns	1—5 in, 38 cal, 4—40 mm AA
A/S weapons	Hedgehog; 4 K mortars
Main engines	Diesel, 6 080 bhp = 19 knots
Radius, miles	22 000 at economical 11 knots; 8 000 at maximum 19 knots
Complement	215

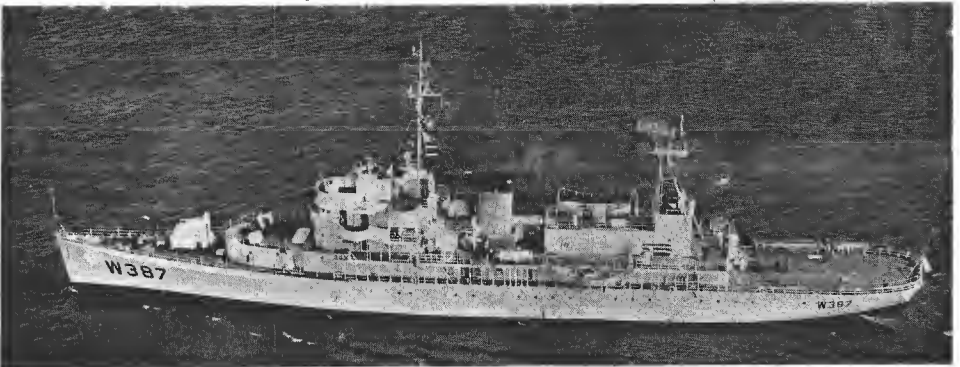
Rated as 311 ft Cutters. All except *Dexter*, *Gresham* and *McCulloch* are AVPs on loan from the US Navy. *McCulloch*, on loan since 1948, transferred to GG in Oct 1966. Employed as ocean station ships. *Dexter* was refitted with four new Fairbanks-Morse diesels in 1957 and was recommissioned in July 1958 for duty as West Coast Training Ship. *Unimak* is East Coast Training ship. *Rockaway* was adapted as oceanographic ship in 1966.

GUNNERY. The 20 mm AA were removed in 1957. The 40 mm are to be replaced by 50 cal machine guns.

DESIGNATION. The designation of all these ships was changed from WAVP to WHEC on 1 May 1966.

LISTING. All United States Coast Guard cutters and tenders are officially listed in order of length.

PHOTOGRAPHS. A photograph of *Half Moon* appears in the 1952-53 to 1957-58 editions, of *Mackinac* (port bow surface view) in the 1954-55 to 1957-58 editions, of *Rockaway* in the 1958-59 to 1964-65 editions and of *Matagorda* in the 1963-64 to 1965-66 editions.



GRESHAM 1965, United States Coast Guard, Official



MACKINAC 1966, United States Coast Guard, Official

MEDIUM ENDURANCE CUTTERS (WMEC)

11 + 5 New Construction. 210 Class

Displacement, tons	950 standard, 1 000 full load
Dimensions, feet	210.5 oa x 34 x 10.5
Guns	1—3 in, 50 cal forward
Aircraft	HH—52A helicopter
Main engines	2 shafts; 5 000 bhp = 18 knots; see <i>Engineering</i> notes below.
Radius, miles	6 000 at 15 knots (<i>cruising</i>)
Complement	64 (7 officers, 57 men)

A new class of cutters designed by the US Coast Guard. Primarily intended for search and rescue duties, the superstructure is arranged on three levels forward of midship, affording the wheelhouse 360 degree visibility. Another feature is a flight deck aft suitable for carrying the Coast Guard's newest type of rescue helicopter. A streamlined tower type mast with platform, yard end gaff accommodates the navigation and signal lights and antennae. Conspicuously missing is the conventional funnel, which is eliminated by the use of the exhaust vent in the stern. Equipped with facilities for ocean towing of vessels up to 10,000 tons gross. The accommodation for 8 officers, 66 men is comparable with that in the most modern merchant ships. Air conditioned throughout.

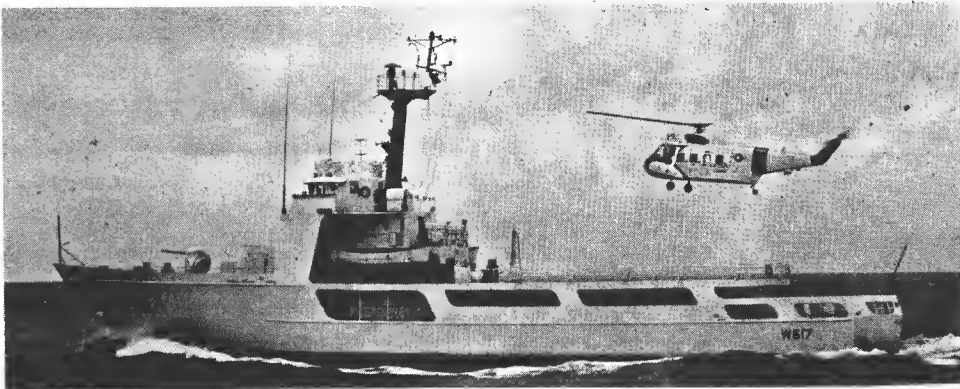
Programmes:—1962 *Diligence*, *Reliance*; 1963 *Vigilant*; 1964, *Active*, *Confidance*; 1965 *Courageous*, *Dauntless*, *Resolute*, *Stadfast*, *Valiant*, *Venturous*; 1966 *Alert* *Decisive*, *Dependable*, *Durable*, *Vigorous*.

ENGINEERING. "Reliance" Class (*Active*, *Confidence*, *Diligence*, *Reliance*, *Vigilant*):—Each of the twin screws is driven by a combination two 2 500 hp turbo-charged diesels and two 1 000 hp gas turbines. Controllable pitch propellers for reverse. Cruising on diesels, top speed on gas turbines. Unmanned engine room. "Resolute" Class (11 later ships, 620 to 630):—2 diesels each of 2 500 hp.

RECLASSIFICATION. Designation was changed from WPC (Patrol Craft) to WMEC on 1 May 1966.

PHOTOGRAPHS. A photograph of *Reliance* appears in the 1964-65 and 1965-66 editions.

Name	No.	Builders	Laid down	Launched	Completed
ACTIVE	WMEC 618	Christy Corp	29 June 1964	31 July 1965	8 Aug 1966
ALERT	WMEC 630	American SB			
CONFIDENCE	WMEC 619	Coast Guard Yd	4 Aug 1964	8 May 1965	19 Feb 1966
COURAGEOUS	WMEC 622	American SB	14 Mar 1966	18 Mar 1967	
DAUNTLESS	WMEC 624	American SB	15 May 1966		
DECISIVE	WMEC 629	Coast Guard Yd	12 May 1967		
DEPENDABLE	WMEC 626	American SB	17 July 1967		
DILIGENCE	WMEC 616	Todd Shipyard	29 Aug 1962	20 July 1963	26 Aug 1964
DURABLE	WMEC 628	Coast Guard Yd	1 July 1966	29 Apr 1967	
RELiance	WMEC 615	Todd Shipyard	29 Sep 1962	25 May 1963	20 June 1964
RESOLUTE	WMEC 620	American SB	17 May 1965	30 Apr 1966	5 Dec 1966
STEADFAST	WMEC 623	American SB	2 May 1966	24 June 1967	
VALIANT	WMEC 621	American SB	28 Feb 1966	14 Jan 1967	
VENTUROUS	WMEC 625	Coast Guard Yd	22 May 1967		
VIGILANT	WMEC 617	Todd Shipyard	1 Jan 1963	23 Dec 1963	30 Oct 1964
VIGOROUS	WMEC 627	American SB			



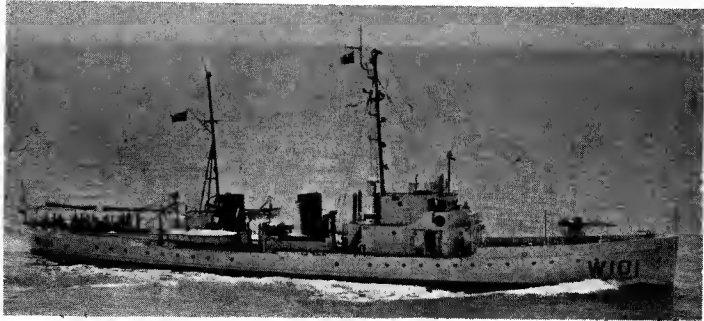
VIGILANT 1966, United States Coast Guard, Official

Medium Endurance Cutters—continued

3 "Argo" Class (WMEC, ex-WPC)

ARIADNE 101	AURORA 103	TRITON 116
Displacement, tons	337 standard; 370 full load	
Dimensions, feet	165 oa × 25.2 × 9.5	
Guns	1—3 in, 50 cal	
Main engines	Winston diesels; 2 shafts; 1 340 bhp = 14 knots	

Rated as 165 ft Cutters. Built of steel. All launched in 1931-34. *Pandora* and *Perseus* were sold in 1959, and *Nemesis* and *Nike* were deleted from the list in 1965. A photograph of *Aurora* appears in the 1952-53 to 1960-61 editions.

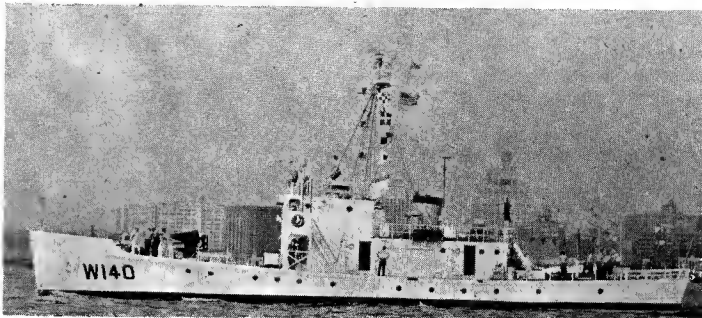


ARIADNE 1965, United States Coast Guard, Official

11 "Active" Class (WMEC, ex-WSC)

AGASSIZ 126	CARTIGAN 132	GEN. GREEN 140	McLANE 146
ALERT 127	EWING 137	KIMBALL 143	MORRIS 147
CAHOONE 131	LEGARE 144	YEATON 156	
Displacement, tons	220 standard; 290 full load		
Dimensions, feet	125 oa × 23.5 × 9		
Guns	1—40 mm AA		
Main engines	Diesels; 2 shafts; 800 bhp = 13 knots		

Rated as 125 ft Cutters. Built of steel. All launched in 1926-27. All re-engined in 1939-42. *Bonham* was disposed of in 1959, *Diligence* in 1961, *Active*, *Marion* and *Travis* in 1962, *Boutwell* in 1963, *Cayahoga* in 1964 and *Frederick Lee* in 1965. A photograph of *Agassiz* appears in the 1953-54 to 1959-60 editions, and of *Legare* in the 1960-61 to 1964-65 editions.



GENERAL GREENE 1965, United States Coast Guard, Official

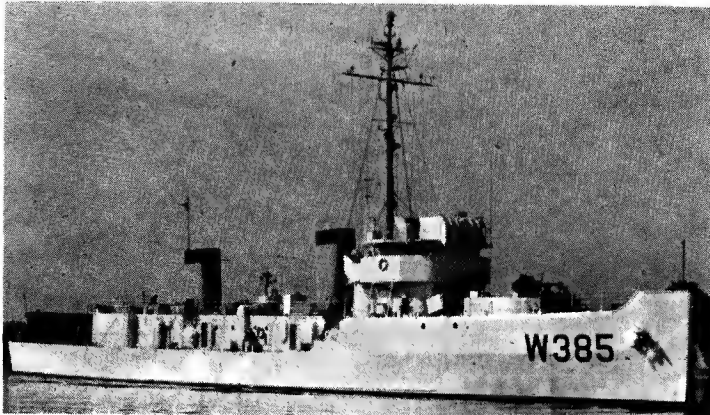
TRAINING CUTTER

1 Ex-U.S.N. MSF Type

TANAGER (ex-USS MSF 385) WTR 385

Displacement, tons	890 standard; 1 077 full load
Dimensions, feet	215 wl; 221 oa × 32.2 × 10.8
Main engines	Diesel-electric; 2 shafts; 3 474 bhp = 18 knots
Complement	5 officers, 34 men (80 reserve trainees)

Former fleet minesweeper, large steel-hulled type, acquired from the US Navy in 1964 as a Coast Guard Reserve training ship, at Yorktown, Va. Her minesweeping equipment was removed and a living compartment added. Built by American Shipbuilding Co, Lorain, Ohio. Laid down on 29 Mar 1944. Launched on 9 Dec 1944.



TANAGER 1964, United States Coast Guard, Official

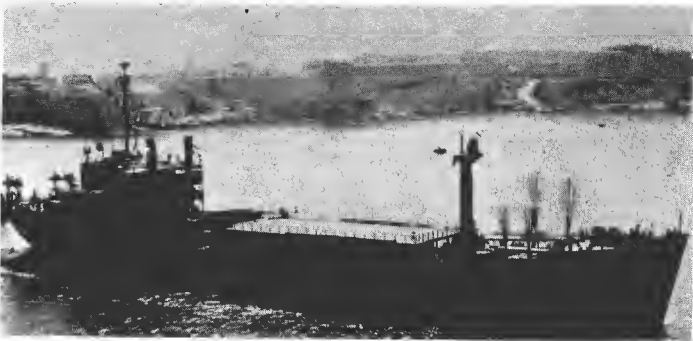
TRAINING SHIPS

1 Ex-WAGR (ex-U.S.N. AK) Type

COURIER (ex-Coastal Messenger, ex-USS Doddridge, AK 176) WTR (ex-WAGR) 410

Displacement, tons	5 800 standard; 7 500 full load
Measurement, tons	5 926 deadweight
Dimensions, feet	338.5 × 50.3 × 21
Main engines	Diesel; direct drive; 1 700 bhp = 11 knots
Radius, miles	Approximately 14 500

CI-M-AVI type, launched in 1945. Built as a naval cargo ship but not used by the Navy. Acquired by the US Coast Guard from the US Maritime Commission in 1951, fitted out as an overseas radio relay base, manned by the Coast Guard and operated for the United States Information Agency as a relay station for the "Voice of America" broadcasts from 7 Sep 1952 until 17 May 1964. She was virtually a seagoing radio broadcasting station with transmitting equipment the most powerful of its kind ever installed in any vessel. She commissioned on 15 Feb 1952 and began broadcasts on 7 Sep 1952, being stationed at Island of Rhodes, Greece. She returned to the USA in 1964 and was decommissioned on 25 Aug 1964, but was converted and recommissioned on 1 July 1965 and employed as a training "cutter" for the reserve at Yorktown, Va. Her special communication equipment has been removed. PHOTOGRAPHS. A port bow view of *Courier* appears in the 1952-53 to 1962-63 editions, and a port quarter near broadside view in the 1963-64 to 1965-66 editions.



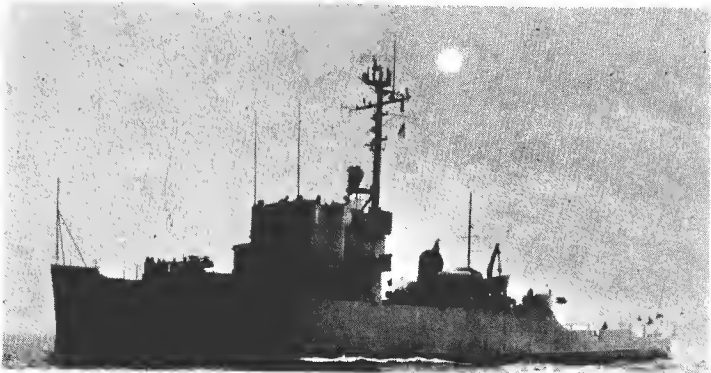
COURIER Added 1967, A. & J. Pavia

1 Ex-U.S.N. PCE Type

LAMAR (ex-USS PCE 899) WTR 899

Displacement, tons	640 standard; 903 full load
Dimensions, feet	180 wl; 184.5 oa × 33 × 9.5
Guns	1—3 in, 50 cal dp; 6—40 mm AA (3 twin) Original armament
Main engines	GM diesels; 2 shafts; 2 000 bhp = 15 knots
Complement	60 (5 officers, 55 men) Navy allowance
	Accommodation for 9 officers, 90 men

Former escort, 180 ft steel type, acquired from the US Navy in 1965, converted for use as Coast Guard Reserve training ship and commissioned in 1965. Built by Willamette Iron & Steel Corp, Portland, Oregon. Laid down 11 Jan 1943. Launched on 11 Aug 1943. Completed (first commission) on 17 Mar 1945.



LAMAR 1966, United States Coast Guard, Official

1 Yacht Type

PETREL 70001

Sailing yacht built in 1938. Acquired on 1 July 1955. 70 feet. Coast Guard Academy, New London, Conn.

DISPOSAL. The former WSC Class cutter *Cuyehoga*, assigned to the Reserve Training Center as a Training Ship for Officer Candidates, was deleted from the list in 1964.

PATROL CRAFT (WPB)
35 "95 ft." Steel Type

CAPE CARTER	95309	CAPE JELLISON	95317
CAPE CORAL	95301	CAPE KIWANDA	95329
CAPE CORWIN	95326	CAPE KNOX	95312
CAPE CROSS	95321	CAPE MORGAN	95313
CAPE CURRENT	95307	CAPE NEWAGEN	95318
CAPE DARBY	95323	CAPE PORPOISE	95327
CAPE FAIRWEATHER	95314	CAPE PROVIDENCE	95335
CAPE FALCON	95330	CAPE ROMAIN	95319
CAPE FLORIDA	95325	CAPE ROSIER	95333
CAPE FOX	95316	CAPE SABLE	95334
CAPE GEORGE	95306	CAPE SHOALWATER	95324
CAPE GULL	95304	CAPE SMALL	95300
CAPE HATTERAS	95305	CAPE STARR	95320
CAPE HEDGE	95311	CAPE STRAIT	95308
CAPE HENLOPEN	95328	CAPE TRINITY	95331
CAPE HIGGON	95302	CAPE UPRIGHT	95303
CAPE HORN	95322	CAPE WASH	95310
		CAPE YORK	95332

CG 95321—95335	CG 95312—95314, 95316—95320	CG 95300—95311
"C" Class (built 1958-59)	"B" Class (built 1955-56)	"A" Class (built 1953)
Displacement, tons	106 (B); 103 (A); 98 (C)	
Dimensions, feet	95 oa × 19 × 6	
Guns	1—81 mm/.50 cal MG	
Main engines	4 diesels; 2 shafts (2 engines in tandem each shaft); 2 200 bhp = 21 knots max	
Radius, miles	1 500 cruising range	
Complement	14 (1 officer, 13 men)	

Rated as 95 ft Cutters. Designed and built at Coast Guard Yard, Curtis Bay, Maryland for port security, search and rescue. "Steel hulled, twin screws. "C" class boats, for search and rescue, have less armament, electronics and displacement.



CAPE JELLISON ("B" Class) 1967



CAPE GULL ("A" Class) 1967



CAPE PROVIDENCE ("C" Class) 1963 United States Coast Guard, Official

Patrol Craft (WPB)—continued
70 "82 ft." Steel Type

POINT ARDEN	82309	POINT HUDSON	82322
POINT ARENA	82346	POINT HURON	82357
POINT BAKER	82342	POINT JEFFERSON	82306
POINT BANKS	82327	POINT JUDITH	82345
POINT BARROW	82348	POINT KENNEDY	82320
POINT BATAN	82340	POINT KNOLL	82367
POINT BENNETT	82351	POINT LEAGUE	82304
POINT BONITA	82347	POINT LEDGE	82324
POINT BRIDGE	82338	POINT LOBOS	82366
POINT BROWN	82362	POINT LOMAS	82321
POINT CAUTION	82301	POINT LOOKOUT	82341
POINT CHARLES	82361	POINT MAST	82316
POINT CHICO	82339	POINT MONROE	82353
POINT CLEAR	82315	POINT MORONE	82331
POINT COMFORT	82317	POINT NOWELL	82363
POINT COUNTESS	82335	POINT ORIENT	82319
POINT CYPRESS	82326	POINT PARTRIDGE	82305
POINT DIVIDE	82337	POINT RICHMOND	82370
POINT DUME	82325	POINT ROBERTS	82332
POINT ELLIS	82330	POINT SAL	82352
POINT ESTERO	82344	POINT SLOCUM	82313
POINT EVANS	82354	POINT SPENCER	82349
POINT FRANCIS	82356	POINT STEELE	82359
POINT FRANKLIN	82350	POINT STUART	82358
POINT GAMMON	82328	POINT SWIFT	82312
POINT GARNET	82310	POINT THATCHER	82314
POINT GLASS	82336	POINT TURNER	82365
POINT GLOVER	82307	POINT VERDE	82311
POINT GRACE	82323	POINT WARDE	82368
POINT GREY	82324	POINT WELCOME	82329
POINT HANNON	82355	POINT WELLS	82343
POINT HERRON	82318	POINT WHITE	82308
POINT HEYER	82369	POINT WHITEHORN	82364
POINT HIGHLAND	82333	POINT WINESLOW	82360
POINT HOPE	82302	POINT YOUNG	82303

CG 82332—82370	CG 82318—82331	CG 82301—82317
"C" class (built 1962-63 and 1965-67)	"B" Class (built 1961)	"A" Class (built 1960-61)
Displacement, tons	64 standard; 67 full load	
Dimensions, feet	78.1 wl; 83 oa × 17.2 × 5.8	
Guns	1—81 mm/.50 cal MG	
Main engines	2 diesels; 2 shafts; 1 200 bhp = 17 knots (see Notes)	
Complement	8 to 10	

Rated as 82 ft Cutters. Designed and built at Coast Guard Yard, for law enforcement, search and rescue. Steel hulls, unmanned engine room controlled from the bridge, power steering and air conditioning. "C" class modifications (also 82318) include increase in bhp to 1 600 and speed to 23 knots. In 1965 26 of these craft were deployed with the Navy and transferred to duty in Vietnam (they have a double action gun consisting of a .50 cal machine gun mounted on top of an 81 mm mortar, replacing the former 20 mm gun). As a result 17 replacement cutters were added to the construction programme plus nine already planned. Of the latter, *Point Arena*, *Point Barrow*, *Point Bonita*, *Point Franklin*, *Point Judith* and *Point Spencer* were built under the Fiscal Year 1965 Programme by Martinac S8, Tacoma, Wash, and 82351 to 82370 in the 1966 programme. 26 completed by July 1967.

NOMENCLATURE. CG 82301-82344 were assigned "Point" names in Jan 1964, and redesignated patrol craft instead of patrol boats.



POINT THATCHER 1962, United States Coast Guard, Official

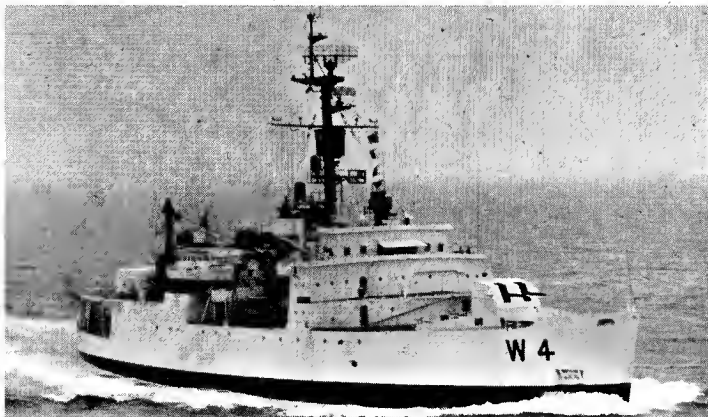


POINT BATAN 1967

ICEBREAKERS (WAGB)**GLACIER (ex-USN AGB 4) WAGB 4**

Displacement, tons B 449
 Dimensions, feet 310 × 74 × 29
 Aircraft 2 Helicopters
 Guns 2—5 in, 38 cal twin mount;
 Main engines 10 Fairbanks-Morse diesels and 2 Westinghouse 10 500 hp electric motors; 2 shafts; 31 000 shp = 18.3 knots
 Range, miles 25 000 at cruising speed of 12 knots
 Complement 15 officers, 226 men

Designed and built by Ingalls Shipbuilding Corporation, Pascagoula, Mississippi. Laid down on 3 Aug 1953, launched on 27 Aug 1954 and commissioned on 27 May 1955. Designed for breaking ice more than 20 feet thick. Her bow is heavily armored for driving the ship on top of the ice field and crushing it by sheer weight. Helicopters are carried to spot the best course through the ice. Largest and highest powered American icebreaker yet built. Has largest capacity single-armature DC motors ever built and installed in a ship. Carries an LCVP in addition to five boats and rafts for entire ship's company. Thick double hull.



GLACIER

1966, United States Coast Guard, Official

MACKINAW (ex-Manitowac) WAGB 83

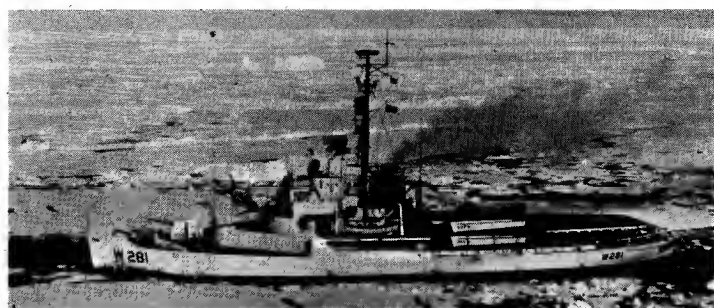
Displacement, tons 5 252
 Dimensions, feet 290 oa × 74 × 19
 Aircraft 1 helicopter
 Main engines Diesel; with electric drive; 3 shafts (1 forward, 2 aft); 10 000 bhp = 18.7 knots
 Radius, miles 60 000 range at economical speed of 9 knots

Built by Toledo Shipbuilding Co, Ohio. Laid down on 20 Mar 1943. Launched on 6 Mar 1944. Commissioned on 20 Dec 1944. Completed in Jan 1945. Specially designed and constructed with 1.6 in. plating for service as icebreaker on the Great Lakes. Equipped with two 12-ton cranes. Clear area for helicopter is provided on the quarter deck. Machine guns were removed early in 1962.



MACKINAW

1967



WESTWIND

1966, United States Coast Guard, Official

Icebreakers—continued**7 "Wind" Class**

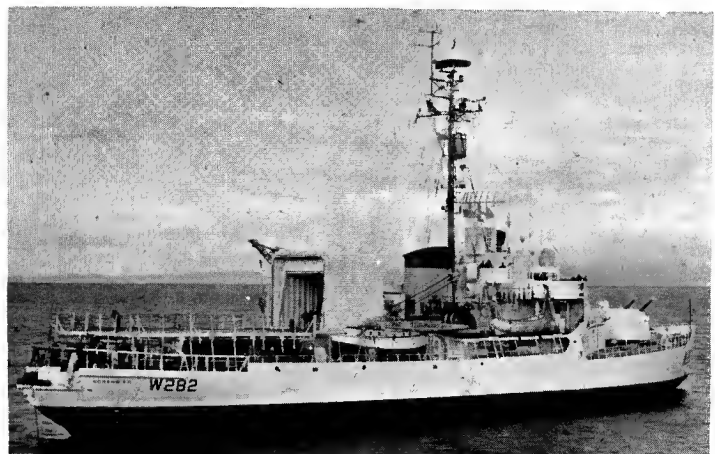
Name	WAGB	Launched
BURTON ISLAND	283 (ex-AGB 1, ex-AG 88)	30 Apr 1946*
EASTWIND	279	6 Feb 1943
EDISTO	284 (ex-AGB 2, ex-AG 89)	29 May 1946
NORTHWIND	282	25 Feb 1945
SOUTHWIND (ex-Akta)	280 (ex-AGB 3)	8 Mar 1943
STATEN ISLAND (ex-Northwind)	278 (ex-AGB 5)	28 Dec 1942
WESTWIND	281	31 Mar 1943

Displacement, tons 3 500 standard; 6,515 full load
 Dimensions, feet 250 pp; 269 oa × 63.5 × 29
 Aircraft Two H-19 or H-52 helicopters
 Guns Eastwind: 2—3 in, 50 cal
 Northwind: 2—5 in, 38 cal
 Burton Island, Staten Island: None
 Other three: 1—5 in, 38 cal
 Main engines 6 diesel-electric; 2 shafts; 13 300 bhp = 16 knots
 Radius, miles 38 000 range at economical speed of 10.5 knots
 Complement 21 officers, 195 men (Burton Island 15 and 196)

All built by the Western Pipe & Steel Co, San Pedro, California. Construction is entirely welded, with double hull and exceptionally heavy plating designed to crush ice 9 ft thick. Forward shafts were removed. All ships have helicopter flight deck and telescopic hangar aft. Northwind (first ship of that name), Southwind (Severini Veler) and Westwind (Severini Polius) were lent to the Soviet Navy in 1945. Southwind was returned in 1950, other two in Dec 1951. The four 40 mm guns in Northwind and Westwind and the four 20 mm guns in Eastwind were removed in 1962.

TRANSFERS It was officially announced in June 1965 that all five of the US Navy icebreakers would be transferred to the Coast Guard to consolidate a responsibility divided between the USN and USCG. Edisto was transferred on 20 Oct 1965, Staten Island on 1 Feb 1966, Glacier on 30 June 1966, Akta (again renamed Southwind in Jan 1967) on 20 Oct 1966 and Burton Island (originally commissioned in the US Navy on 23 Dec 1946) on 15 Dec 1966.

PHOTOGRAPHS Photographs of Eastwind appear in the 1958-59 to 1965-66 editions. A photograph of Burton Island appears in the 1958-59 to 1965-66 editions, and of Edisto in the 1956-57 and 1957-58 editions. A starboard bow near broadside view of Northwind showing hangar extended, appears in the 1964-65 to 1966-67 editions.



NORTHWIND

1967

STORIS (ex-Eskimo) WAGB 38

Displacement, tons 1 715 standard; 1 925 full load
 Dimensions, feet 230 oa × 43 × 15
 Guns 1—3 in, 50 cal; 2 rocket launchers
 Aircraft 2—H-13 helicopters or 1 H-19 or H-52
 Main engines Diesel-electric; 1 shaft; 1 800 bhp = 14 knots

Built by Toledo Shipbuilding Co, Ohio. Launched in 1942. Ice patrol tender. Helicopter platform aft. Strengthened for ice navigation. Employed on Alaskan service. Search, rescue and law enforcement are primary duties. Makes supply runs to isolated Coast Guard installations within her patrol area. Her designation was changed from WAG to WAGB on 1 May 1966.



STORIS

1965, United States Coast Guard, Official

SEAGOING TENDERS (WLB)

5 "Heather" Class (Former Navy Minelayers)

HEATHER (ex-Obstructor)	331	MAGNOLIA (ex-Barricade)	328
IVY (ex-Barbican)	329	WILLOW (ex-Picket)	332
JONQUIL (ex-Bastion)	330		

Displacement, tons 1 054 standard; 1 250 full load
Dimensions, feet 188.7 oa x 37 x 12
Main engines Triple expansion; 2 shafts; 1 200 ihp = 12 knots

Ex-Army mineplanters, ex-US Navy ACM 7, 5, 6, 3, 8. Launched in 1942. Re-designated Seagoing Tenders, WLB instead of WAGL on 1 Jan 1965.



HEATHER 1966, United States Coast Guard, Official

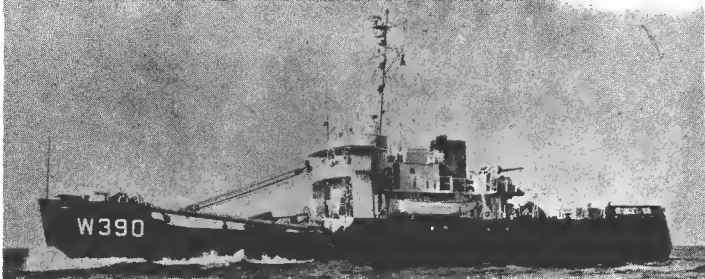
38 "Cactus" and "Iris" Classes

20 Marine Iron SB Co, Duluth	17 Zenith Dredge Co, Duluth
BASSWOOD 388	ACACIA (ex-Thistle) 406 7 Apr 1944
BLACKHAW 390 18 June 1943	BALSAM 62 1942
BLACKTHORN 391 20 July 1943	BITTERSWEET 389 1943
BUTTONWOOD 306 28 Nov 1942	BRAMBLE 392 1943
CACTUS 270 25 Nov 1941	FIREBUSH 393 1943
CITRUS 300 15 Aug 1942	GENTIAN 290 1942
CLOVER 292 1942	IRIS 395 10 Mar 1944
CONIFER 301 3 Oct 1942	LAUREL 291 4 Aug 1942
COWSLIP 277 1942	MADRONA 302 11 Nov 1942
EVERGREEN 295	MALLOW 396 1943
HORNBEAM 394 15 Aug 1943	MARIPOSA 397 7 Jan 1944
MESQUITE 305 14 Nov 1942	SAGEBRUSH 399 30 Sep 1943
PAPAW 308	SALVIA 400 15 Sep 1943
PLANETREE 307	SORRELL 296 28 Sep 1942
SASSAFRAS 401 1943	TUPELO 303 28 Nov 1942
SEDGE 402 1943	WOODBINE 289
SPAR 403 2 Nov 1943	WOODBUSH 407 1944
SUNDEW 404 8 Feb 1944	
SWEETBRIAR 405 30 Dec 1943	1 Coast Guard Shipyard, Curtis Bay
SWEETGUM 309 1943	IRONWOOD 297 Mar 1943

Displacement, tons 935 standard; 1 025 full load
Dimensions, feet 180 oa x 37 x 14
Guns 1—3 in, 50 cal; rocket launchers*
Main engines Diesel electric; 1 200 bhp = 12 knots (Citrus, Clover, Conifer, Cowslip, Evergreen, Tupelo, Woodbine, 1 000 bhp = 11 knots)
Some have Sundew diesels 1 800 bhp

Builders and launch dates above. Cactus and Evergreen are used as oceanographic cutters, and designated WAGO. Evergreen was the International Ice Patrol Vessel for 1963. Cowslip was fitted with controllable pitch transverse bow propeller in 1961, Bittersweet with bow thruster propeller in 1966. All to be so fitted. Photographs of Cactus (converted to WAGO in 1967) and Firebush appear in the 1959-60 to 1964-65 editions.

*3 inch guns and ASW equipment to be removed and .50 cal MG installed, except in Citrus, Cowslip, Evergreen, Sedge and Sorrel.



BLACKHAW 1965, United States Coast Guard, Official



EVERGREEN 1966, United States Coast Guard, Official

COASTAL TENDERS (WLM)

3 "Hollyhock" Class

FIR 212	HOLLYHOCK 220	WALNUT 252
Displacement, tons 989		
Dimensions, feet 175 x 32 x 12		
Main engines Diesel reduction; 2 shafts; 1 350 bhp = 12 knots		

Launched in 1937 (Hollyhock) and 1939 (Fir and Walnut). Walnut was re-engined by Willamette Iron & Steel Co, Portland, Oregon, in 1958. Redesignated Coastal Tenders, WLM instead of Buoy Tenders, WAGL on 1 Jan 1965



WALNUT 1963, United States Coast Guard, Official

JUNIPER 224	
Displacement, tons 794	
Dimensions, feet 177 x 23.7 x 9.2	
Main engines Diesel, with electric drive; 2 shafts; 900 bhp = 11 knots	

Launched on 18 May 1940. No. WLM (ex-WALG) 224. Redesignated WLM on 1 Jan 1965.



JUNIPER Added 1967, Official

ARBUTUS 203	
Displacement, tons 960	
Dimensions, feet 175 x 32 x 12.2	
Main engines Reciprocating; 2 shafts; 1 000 ihp = 11 knots	

Launched in 1934. No. WLM (ex-WAGL) 203. Redesignated WLM on 1 Jan 1965.

DISPOSALS
Hemlock was decommissioned in 1958 and sold. Violet was decommissioned in 1962, and sold in 1963.

MISTLETOE 237	
Displacement, tons 1 040	
Dimensions, feet 173 x 34 x 11	
Main engines Reciprocating; 2 shafts; 1 000 ihp = 11 knots	

Launched in 1939. No. WLM (ex-WAGL) 237. Redesignated WLM on 1 Jan 1965



MISTLETOE Added 1967, Official

LILAC 227	
Displacement, tons 770	
Dimensions, feet 172 x 32 x 8.5	
Main engines Reciprocating; 2 shafts; 1 000 ihp = 11.5 knots	

Launched in 1933. No. WLM (ex-WAGL) 227. Redesignated WLM on 1 Jan 1965.

Coastal Tenders—continued

3 "Red" Class

RED BEECH 686	RED BIRCH 687	RED WOOD 685
Displacement, tons	471 standard	
Dimensions, feet	157 oa × 32 × 6	
Main engines	2 diesels; 2 shafts; 1 800 bhp = 14 knots	
Radius, miles	3 000 at 12 knots cruising range	
Complement	32	

Red Wood was laid down in 1963 and commissioned on 4 Aug 1964 at the Coast Guard Yard, Curtis Bay, Md, where *Red Beech* was commissioned on 20 Nov 1964 and *Red Birch* was commissioned on 7 June 1965. Controllable pitch propellers. 80w thruster unit to give high manoeuvrability. Hull reinforced for light icebreaking. Steering and engine control on bridge wings as well as in pilothouse.



RED WOOD 1965, United States Coast Guard, Official

8 "White" Class

WHITE ALDER	WHITE HOLLY	WHITE SAGE
WHITE BUSH	WHITE LUPINE	WHITE SUMAC
WHITE HEATH	WHITE PINE	
Displacement, tons	435	
Dimensions, feet	133 oa × 30 × 10	
Main engines	Diesel; 600 bhp = 10 knots	

All launched in 1943. All eight ships are former US Navy YFs, adapted for the Coast Guard.
DISPOSALS
Of the two "Hawthorne" class coastal tenders, *Hawthorne*, WLM 215 (ex-WAGL 215) was decommissioned on 24 July 1964, and *Oak* WLM 239 (ex-WAGL 239) on 1 Sep 1964. Both were officially deleted from the list in 1965. They were replaced by *Red Beech* and *Red Wood*, see above. The larger but older *Cedar* was sold in June 1955.

INLAND TENDERS, LARGE (WLI)

10 "100 ft." Class

AZALEA (18 Feb 1948)	BUCKTHORN	PRIMROSE
BARBERRY (14 Nov 1942)	BRIER	RAMBLER
BLUEBELL	COSMOS (11 Nov 1942)	SMILAX
		VERBENA
Displacement, tons	178	
Dimensions, feet	100 × 24 × 4.5	
Main engines	Diesel, 2 shafts; 300 bhp = 8.5 knots	
Complement	15 (1 officer, 14 men)	

Launch dates above. Eight are of "A" Class. *Azalea* WLI 641, of "B" Class, laid down on 1 Oct 1957 and commissioned on 23 May 1958, was built at the Coast Guard Yard Curtis Bay, Maryland, to replace the old *Palmetto*. She is air-conditioned and has a pile driver in the bow. See photograph in the 1959-60 to 1965-66 editions. She cost \$500 000. *Buckthorn* WLI 642, of "C" Class, built at Coast Guard Yard, commissioned on 17 July 1964.



BUCKTHORN 1966, United States Coast Guard, Official

HICKORY	
Displacement, tons	400
Dimensions, feet	131.2 × 24.5 × 9.5
Main engines	Reciprocating. 500 ihp = 12 knots

Launched in 1933. This ship and following were redesignated Inland Tenders, Large, WLI, instead of Buoy Tenders, WAGL on 1 Jan 1965.

TAMARACK	
Displacement, tons	400
Dimensions, feet	124 × 29 × 7.5
Main engines	Diesel, with electric drive; 600 bhp = 10 knots

Launched in 1934. Redesignated Inland Tender, Large, WLI on 1 Jan 1965.

3 "Maple" Class

MAPLE	NARCISSUS	ZINNIA
Displacement, tons	342 (<i>Maple</i> , 350)	
Dimensions, feet	122 × 27 × 6.5	
Main engines	Diesel; 2 shafts; 400 bhp = 10 knots	

All launched in 1939. Redesignated Inland Tenders, Large, WLI on 1 Jan 1965.

Inland Tenders, Large—continued

2 "Columbine" Class

LINDEN		WISTARIA
Displacement, tons	323	
Dimensions, feet	121.5 × 25 × 6.8	
Main engines	Diesel, with electric drive; 240 bhp = 9 knots	

Launched in 1931 (*Linden*) and 1933 (*Wistaria*). A new engine for *Linden* was provided in the Fiscal Year 1959 programme. Sister ship *Columbine* WLI 208, decommissioned on 8 Oct 1965 and is in storage at Alameda, Calif.
DISPOSALS
Of the two ships of the "Aster" class, *Thistle* decommissioned in 1957, and was sold in 1959 and *Aster* was decommissioned on 15 Aug 1962 to be sold.

CLEMATIS (1944)	93 tons	ELM (1937)	69 tons
SHADBUSH (1944)			

Small buoy tenders. Redesignated Inland Tenders, Small, WLI on 1 Jan 1965.
DISPOSALS
Blackrock was sold to Haiti in Nov 1945. *Palmetto* was decommissioned in June 1958 and sold in 1958; she was replaced by *Azalea* (see "100-ft" class above) in 1958. *Rhododendron* was decommissioned for sale in 1958. *Poinciana* decommissioned on 17 Aug 1962. *Althea* on 10 Nov 1962, *Beech* on 23 Jan 1963, *Myrtle* on 8 Feb 1963, *Birch* on 24 Feb 1963, *Dahlia* on 9 Oct 1964, *Cherry* on 1 Dec 1964, *Bluebonnet* and *Jasmine* on 18 Jan 1965, *Elm* 1965.

ANVIL (1962)	CLAMP (1964)	HATCHET (1966)	SPIKE (1966)
AXE (1966)	HAMMER (1962)	MALLET (1962)	WISE (1962)
		SLEDGE (1962)	WEDGE (1964)

Rated as Construction Tenders, Inland, Small (WLIC). All 145 tons, 75 feet.

RIVER TENDERS

FOXGLOVE (1944)	350 tons	DOGWOOD (1942)	230 tons
SUMAC (1944)		FORSYTHIA (1940)	
FERN (6 Nov 1942)		SYCAMORE (1940)	
		GOLDENROD (1938)	
		POPLAR (1939)	193 tons

Rated as River Tenders, Large (WLR). *Goldenrod* was rebuilt and re-engined in 1960. *Foxglove* was refitted in 1961 with three 400 bhp diesels.

LANTANA (1943)	273 tons, 80 ft	OBION (1962)	139 tons, 65 ft
OLEANDER (1940)	80 tons, 73 ft	SCIOTO (1962)	
GASCONADE (1964)		OSAGE (1962)	
MUSKINGUM (1965)		SANGAMON (1962)	
WYACONDA (1965)	145 tons,	BAYBERRY	65 ft
CHIPPEWA (1965)	75 ft	BLACKBERRY	
CHEYENNE (1966)		CHOKEBERRY	
KICKAPOO (1967)		ELDERBERRY	
OUACHITA (1960)	139 tons,	HACKBERRY	
CIMARRON (1960)	65 ft	LOGANBERRY	

Rated as River Tenders, Small (WLR). "Berry" class are of recent construction.

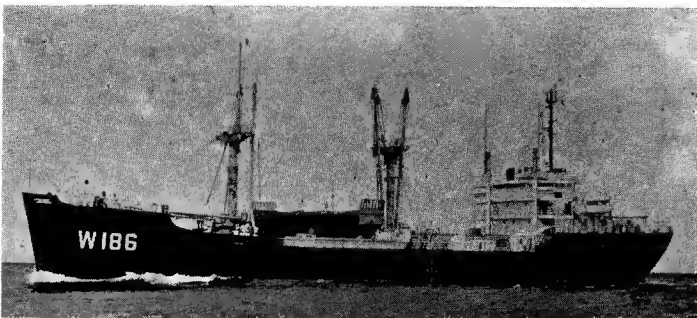
SUPPLY SHIPS

1 Ex-U.S.N. AK Type

KUKUI (ex-USS *Colquitt*, AK 174) WAK 186

Displacement, tons	4 900 light; 7 450 full load
Measurement, tons	5 900 gross
Dimensions, feet	320 wl, 338.5 oa × 50 × 21
Main engines	Nordberg diesel; 1 750 bhp = 11.5 knots
Radius, miles	14 500

Former naval cargo ship based at Honolulu to perform logistic services for US Coast Guard stations in the Pacific. Built in 1945 by Froemming Bros, Milwaukee, Wisc. Launched in 1944. Maritime Administration type CI-M-AVL. Appearance originally similar to that of *Courier*, see previous page.



KUKUI 1965, United States Coast Guard, Official

1 Ex-U.S.A. FS Type

NETTLE (ex-FS 396) WAK 169

Displacement, tons	728
Dimensions, feet	176.5 oa × 32 × 10
Main engines	Diesel; 1 000 bhp = 13 knots

Ex-Army craft. Launched in 1944. *Trillium* was transferred to the US Navy Reserve Fleet on 7 July 1955, for delivery to the Korean Navy in 1956. AKL 43 (ex-FS 219) was transferred from the Navy to the Coast Guard at Curtis Bay, Md on 29 Oct 1963, but officially deleted from the list in 1965.

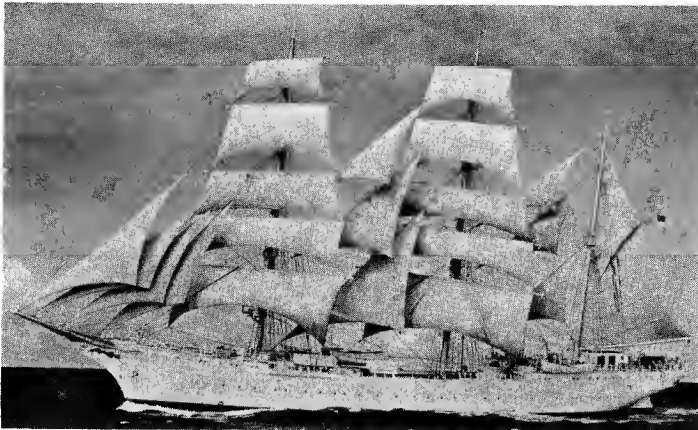
TRANSFER. The cable layer, *Yamacraw* WARC 333, was transferred to the US Navy on a loan basis in 1959, but was stricken from the Navy list on 1 July 1965 and transferred to the Maritime Administration Reserve Fleet.

SAIL TRAINING SHIP (WIX)**1 Ex-German Type (Auxiliary Barque)****EAGLE (ex-Horst Wessel) 327**

Displacement, tons 1 634; 1 816 full load
 Dimensions, feet 265-8 pp; 295-2 oa × 39-3 × 17
 Sail area, sq ft 21 351
 Height of masts, feet 150
 Speed As high as 18 knots under full sail alone
 Main engines Auxiliary diesel; 1 shaft; 740 bhp = 10 knots
 Oil fuel, tons 48
 Radius, miles 3 500 at 10 knots
 Complement 280

Former German training ship for 200 naval cadets. Built by Blohm & Voss, Hamburg. Launched on 13 June 1936. Taken by the United States as part of reparations after the Second World War for employment in US Coast Guard Practice Squadron. Taken over at Bremerhaven in Jan 1946. Arrived at home port, New London, Conn in July 1946. Has made several cruises to European waters to train Coast Guard cadets.

CLASS. Sister ship, *Albert Leo Schlageter*, was also taken by the USA in 1945 but was sold to Brazil in 1948 and re-sold to Portugal in 1962.



EAGLE

1965, United States Coast Guard, Official

LIGHT SHIPS (WLV)

Total 18, of which all are active. 14 are on Station assignments and four are relief lightships. Overall length: 97 to 149 feet. Eight decommissioned lightships were sold in 1955-56. WAL 511 was sold in 1959: WAL 505 sank after collision in 1960. WAL 534 (*Nantucket*) was re-engined in the 1960 Fiscal Year, WAL 504, WAL 508 and WAL 513 were decommissioned and placed in storage in 1959-60. WAL 515 was decommissioned in Nov 1961 and WAL 510 in Nov 1962. Four ships were decommissioned in Fiscal Year 1964 and three during Fiscal Year 1965. Three more were scheduled for decommissioning in Fiscal Year 1966. Remainder were redesignated WLV instead of WAL on 1 Jan 1965.

AUXILIARY OCEAN TUGS (WATA)**2 "Modoc" Type****COMANCHE (ex-Wampanaog) 202****MODOC (ex-Bagaduce) 194**

Displacement, tons 534 standard; 860 full load
 Dimensions, feet 134-5 wl; 143 oa × 34 × 12
 Guns 1—20 mm
 Main engines Diesel-electric; 1 500 bhp = 13 knots
 Complement 4 officers, 40 men

Equipped for search, rescue, firefighting and icebreaking. *Comanche* was transferred direct from the US Navy, replacing *Pandora* and *Modoc* was transferred from the Maritime Administration to the Coast Guard and commissioned at Seattle on 15 Apr 1959, replacing *Bonham*. A photograph of *Comanche* appears in the 1959-60 to 1964-65 editions.



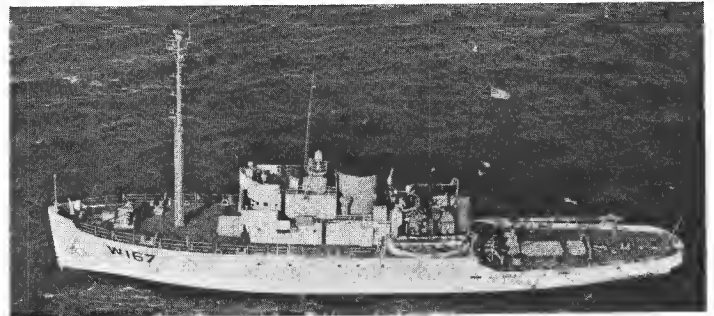
MODOC

1965, United States Coast Guard, Official

OCEANGOING TUGS (WAT)**2 "Acushnet" Type****ACUSHNET (ex-Shackle) 167****YOCONA (ex-Seize) 168**

Displacement, tons 1 557 standard; 1 945 full load
 Dimensions 207 wl; 213-5 oa × 39 × 15-5
 Main engines Diesel-electric; 2 shafts; 3 000 hp = 13 knots

Former US Navy ARS type. Launched on 1 Apr 1943 and 8 Apr 1944, respectively. Remodelled in 1960.



ACUSHNET

1965, United States Coast Guard, Official

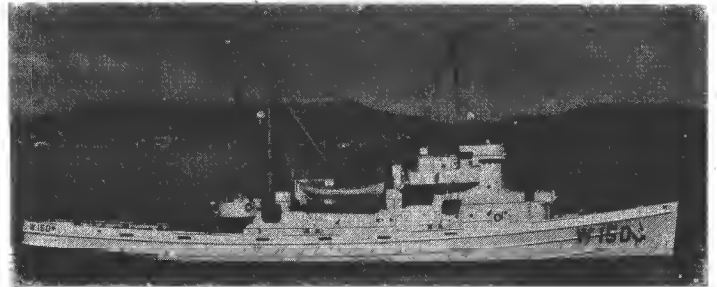
4 "Avoyel" Type

AVOYEL (9 Aug 1944) 150
CHEROKEE (10 Nov 1939) 165

CHILULA (1 Dec 1944) 153
TAMAROA (13 July 1943) 166

Displacement, tons 1 170
 Dimensions, feet 195 wl; 205-2 oa × 38-5 × 16
 Guns 1—3 in, 50 cal
 Main engines Diesel-electric; 3 000 hp = 16 knots

Avoyel and *Chilula* have been on loan from the United States Navy since 1956 (recommissioned from the Reserve Fleet). A photograph of *Tamaroa* appears in the 1959-60 to 1963-64 editions.



AVOYEL

1964, United States Coast Guard, Official

MEDIUM HARBOUR TUGS (WYTM)**13 "Arundel" Class**

ARUNDEL (24 June 1939)	90	CHINOOK (July 1943)	96
MAHONING (22 July 1939)	91	MOHICAN (July 1943)	73
NAUGATUCK (23 Mar 1939)	92	OJIBWA (10 Aug 1943)	97
RARITAN (23 Mar 1939)	93	SAUK (10 Aug 1943)	99
KAW (1942)	61	SNOHOMISH (10 Aug 1943)	98
MANITOU (29 Sep 1942)	60	APALACHEE (1943)	71
		YANKTON (1943)	72

Displacement, tons 328
 Dimensions, feet 110 oa × 26-5 × 12-2
 Main engines Diesel-electric; 1 000 shp = 12 knots

First pair were built by Gulfport Works, Port Arthur, Texas; second pair by Defoe Works, Bay City, Mich; third pair by Coast Guard Yard, Curtis Bay, Md; remaining 7 by Ira S. Bushey & Son, Brooklyn, NY. Launch dates above. Strengthened for icebreaking.

4 "Calumet" Class

CALUMET 86 **HUDSON 87** **NAVESINK 88** **TUCKAHOE 89**

Displacement, tons 290
 Dimensions, feet 110-5 × 24 × 11-5
 Main engines Diesel, with electric drive; bhp = 12 knots

All launched in 1934. *Hudson* was built at Portsmouth Navy Yard, and the other three at Charleston Navy Yard.

There is also **WYTM 85009 (ex-USA ST-710)**, 230 tons displacement, 85 oa × 23 × 9 mean feet, direct drive diesel; 700 shp = 10 knots. Used at Coast Guard Yard.

SMALL HARBOUR TUGS (WYTL)**CHIPPEWA**

First of three. 75 ft, twin screw, 600 bhp diesel, built 1965 by Maxon Construction Co.

Six new steel-hulled harbour tugs, Nos. 65601-65606, were built by Gibbs Corporation, Jacksonville, Florida, in the Fiscal Year 1961 programme. 65 tons displacement, 65 × 19 × 7 mean feet. 400 hp diesel, complement 7. Six more, Nos 65607-65612, were built by Barbour Boat Works, New Bern, NC in the Fiscal Year 1963 Programme, and three more, Nos 65613, 65614 and 65615 by Western Boat Bldg. Corp., Tacoma, Wash in 1965-66.

TRANSFER. *Yonagaska*, WYT 195, was returned to the Navy from which she was on loan.

UNION OF SOVIET SOCIALIST REPUBLICS

Administration
Commander-in-Chief of the Navy and First Deputy Minister of Defence: Admiral of the Fleet Sergei Georgiyevich Gorshkov
First Deputy Commander-in-Chief of Navy: Admiral Vladimir Afanasevich Kasatonov

Strength of the Fleet
50 Nuclear Powered Submarines
350 Conventionally Powered Submarines
20 Cruisers
120 Destroyers, including missile ships
100 Escorts, small frigate type
300 Coastal Escorts, patrol vessels
350 Minesweepers
100 Missile Patrol Boats
350 Motor Torpedo Boats
200 Landing Craft excluding LCMs

Support ships, auxiliaries and service craft run into thousands.

Diplomatic Representation
Naval Attaché in London:
Captain 1st Rank Boris Mikhailovich Polikarpov
Naval Attaché in Washington:
Captain Aleksandr Romanovich Astafiev

Nomenclature
Cruisers after statesmen, admirals or heroes
Destroyers after adjectives
Escorts after birds and winds
Minesweepers after weapons and equipment
Minelayers after rivers and lakes
Survey Ships after astronomical terms
Depot Ships after towns and rivers
Icebreakers after statesmen, Arctic explorers

The hull or side numerals of warships change periodically, although apparently the pennant numbers of auxiliaries do not change.

State
Most ships are of recent construction. Most ships not being refitted are fully manned and operational. Cruisers, destroyers, submarines, many smaller craft are fitted for minelaying.

Appearance
Combatant Ships: Painted light grey all over
Auxiliaries: Painted somewhat darker grey
Surveying Ships: Black hulls with red water-lines, yellow funnels with black tops.

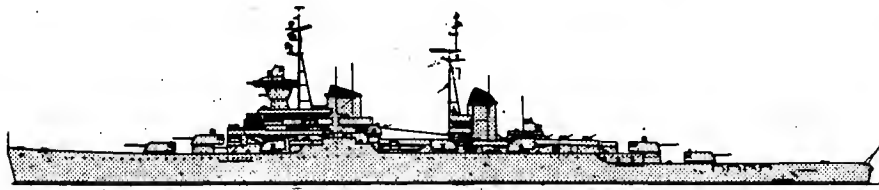
Personnel
Total: 45,000 officers and 450,000 men

Mercantile Marine
Lloyd's Register of Shipping
2,024 vessels of 9,492,031 tons gross

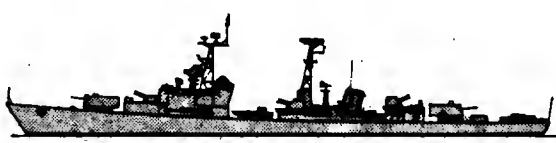
Cruisers, Leaders

Silhouettes


Scale 150 feet = 1 inch




SVERDLOV Class



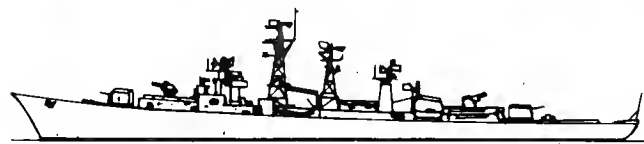
Modified KOTLIN Class




CHAPAYEV Class



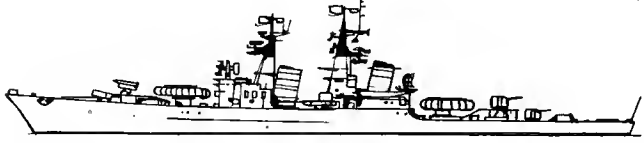
KOTLIN Class




KASHIN Class




TALLIN Class




KYNDА Class




Modified SKORY Class




KRUPNY Class



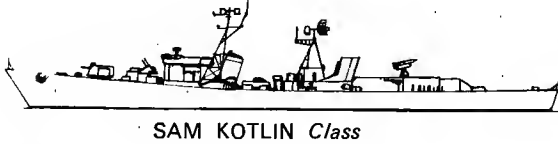
SKORY Class



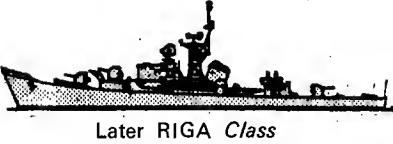
KILDIN Class




KOLA Class



SAM KOTLIN Class



Later RIGA Class



RIGA Class

SUBMARINES (Podvodnye Lodki)

Programme.

There are about 400 effective submarines, of which half are medium range. Most of the remainder are of the large oceangoing type. The majority are known by numbers; some by names as well. It is policy to maintain a four-theatre submarine fleet for operations in the Pacific, in the Baltic, in the Arctic, and in the Black Sea. Some submarines are armed with far-ranging surface rockets with nuclear and warheads.

NEW CONSTRUCTION. Some 30 submarines are under construction in Soviet dockyards. These are reported to include five different types.

Nuclear Powered Submarines

Nuclear Powered Cruise Missile Type

10 "E 2" Class

Displacement, tons	5 000 surface, 5 600 submerged
Dimensions, feet	393.7 × 33 × 27
Missiles	8 launching tubes
Main engines	Nuclear reactors, steam turbines
Speed, knots	22 max; 14 cruising
Complement	100

The "E 2" sub-group design is evidently a development of that of the "E 1" sub-group lengthened to accommodate two more missile launchers.

15 "E 1" Class

Displacement, tons	4 600 surface; 5 000 submerged
Dimensions, feet	385 × 33 × 27
Guided weapons	6 launching tubes for missiles
Main engines	Nuclear reactors, steam turbines;
	20 knots max; 12 knots cruising
Complement	92 (12 officers, 80 men)

A new class of ocean ranging streamlined submarines, fitted with six cruise missiles in launching tubes elevated out of the flush deck, with launchers two abreast. Cruise missiles have a range of about 180 nautical miles. The "E" class submarines in the Pacific were built at Komsomolsk.

Nuclear Powered Ballistic Missile Type

13 "H" Class

Displacement, tons	3 500 surface; 4 100 submerged
Dimensions, feet	328 × 33 × 25
Guided weapon	3 launching tubes for missiles
Tubes	6 bow for 21 inch torpedoes
Main engines	Nuclear reactors, steam turbines;
	15 000 shp = 25 knots surface;
	30 knots submerged
Complement	90

Fast long range submarines armed with three ballistic missile tubes in the large "sail", or conning tower. The earlier missiles are estimated to have a range of 380 nautical miles, but later ballistic missiles have a range of 600 to 3 000 nautical miles.

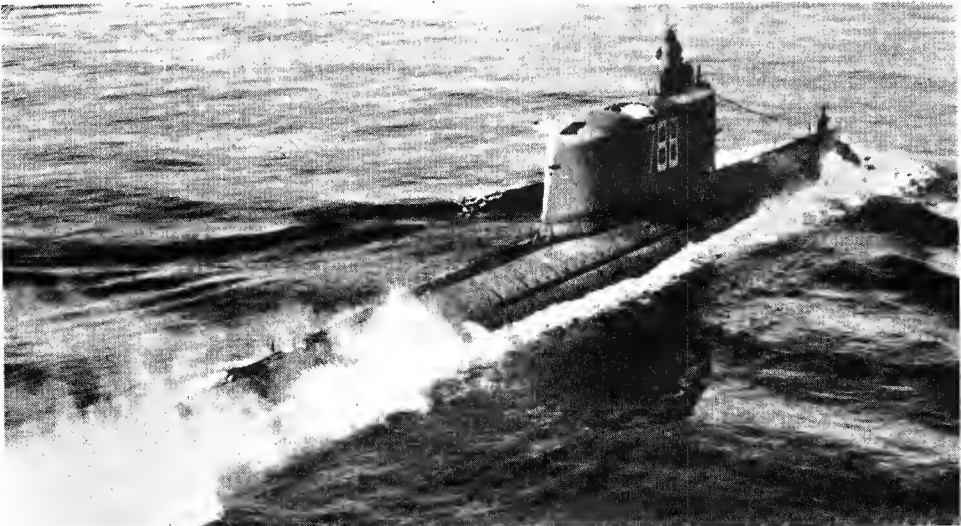
Nuclear Powered Anti-Submarine Type

12 "N" Class

LENINSKY KOMSOMOL 270

Displacement, tons	3 200 surface; 4 000 submerged
Dimensions, feet	328 × 32 × 24
Tubes	6 bow for 21 in torpedoes
Main engines	Nuclear reactors; steam turbines
	15 000 shp = 25 knots surface;
	30 knots submerged
Complement	88

Fast fleet submarines designed as anti-submarine hunter-killers. Basically similar to the "H" class above. All reported to be operational. Vary in detail.

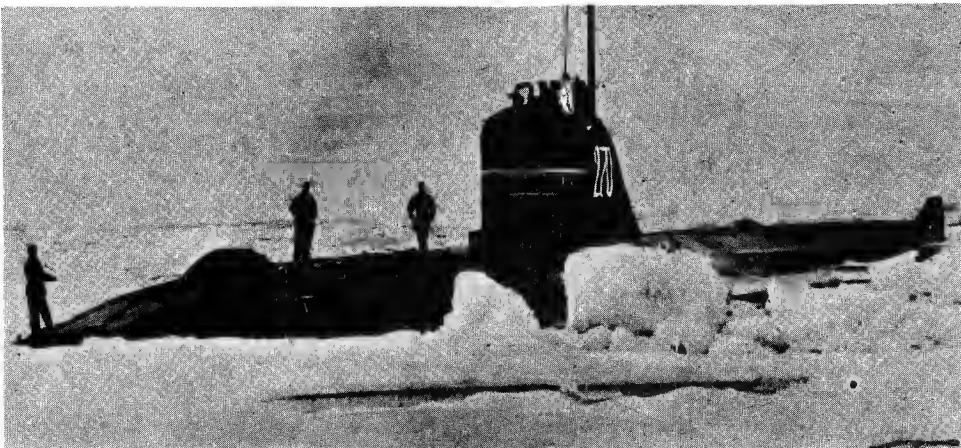


Missile submarine No. 788



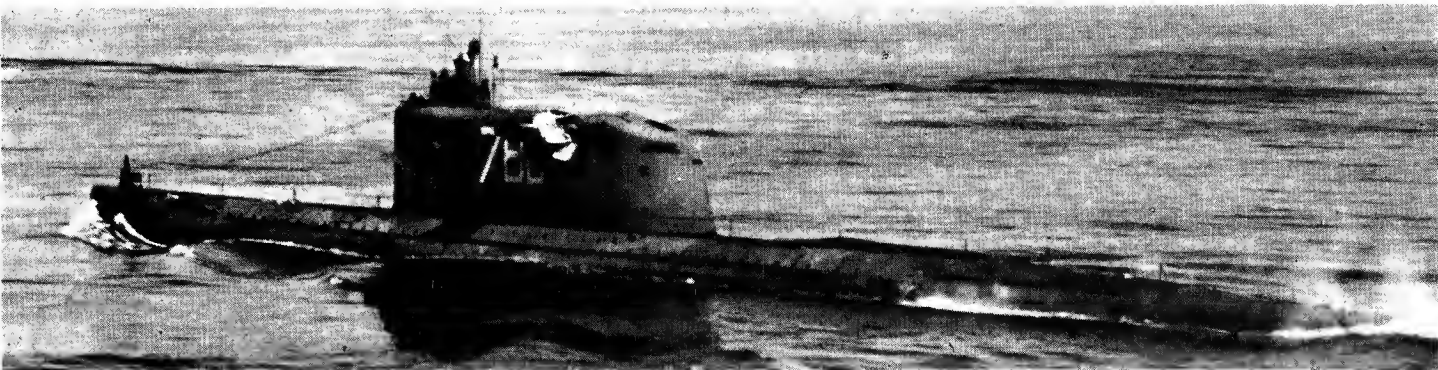
"N" Class

1967, col Borg



LENINSKY KOMSOMOL

1964



Missile submarine No. 780 (side opening hatches open)

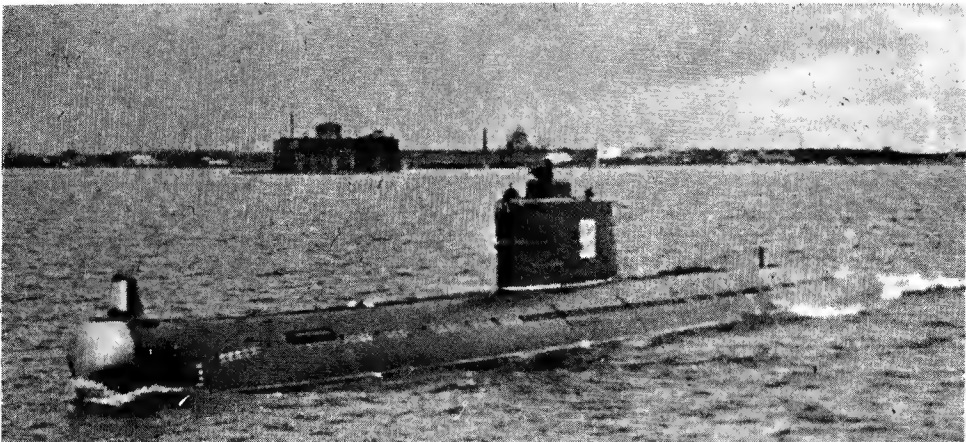
Submarines—continued

Missile Submarines

10 "J" Class

Displacement, tons	1 800 surface; 2 500 submerged
Dimensions, feet	328 × 27 × 20
Guided weapons	4 launchers for missiles; 2 before and 2 abaft the low and extended sail or conning tower
Tubes	Bow, for 21 inch torpedoes
Main engines	Diesels = 19 knots surface; Electric motors = 15 knots submerged

A new type of medium sized submarine with a long superstructure fin and high surface freeboard. The prototype, launched in 1962, is reported to have left the Baltic in 1963, and several completed since.



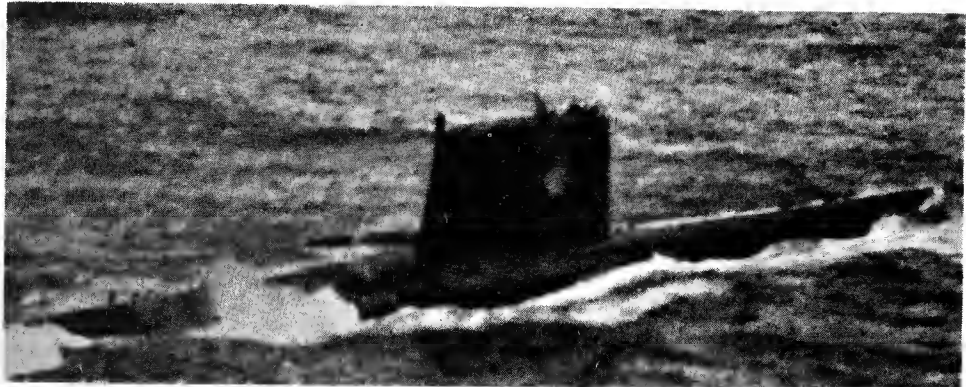
"Z" Class (see Next page)

25 "G" Class. Ballistic Missile Type

No. 773 No. 779 No. 780 No. 783 No. 788

Displacement, tons	2 350 surface; 2 800 submerged
Dimensions, feet	320 × 28 × 22
Guided weapons	3 vertical tubes for missiles
Torpedo tubes	6—21 in bow
Main engines	3 diesels; 3 shafts; Total 6 000 hp = 17.6 knots surface; Electric motors = 17 knots submerged
Radius, miles	22 700 surface cruising
Complement	86 (12 officers, 74 men)

A class having a very large conning tower fitted with three vertically mounted tubes and hatches for launching guided missiles. Built at Komsomolsk and Severodvinsk. Construction commenced in 1958.



"Z" Class. Ballistic Missile Type

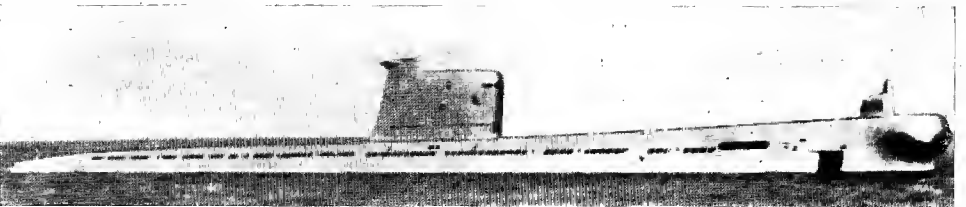
1964

10 "Z" Class. Ballistic Missile Type

No. 124 No. 328

Displacement, tons	2 100 surface; 2 600 submerged
Dimensions, feet	295.2 × 29 × 19
Guided weapons	2 launchers for missiles
Tubes	6—21 in
Main engines	Diesels; 2 shafts; 10 000 bhp = 22 knots surface; Electric motors 3 500 hp = 16 knots submerged
Complement	85

These are basically of "Z" class design but converted to ballistic missiles submarine with larger conning towers and two vertical tubes for missile launching. Six boats were converted initially with further conversions in 1961.

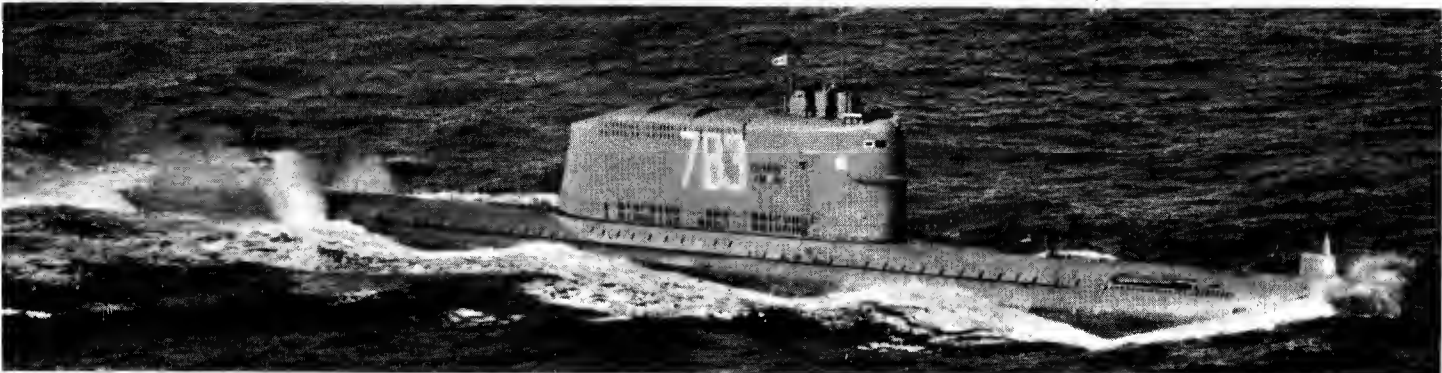


"F" Class (see following page)

1963

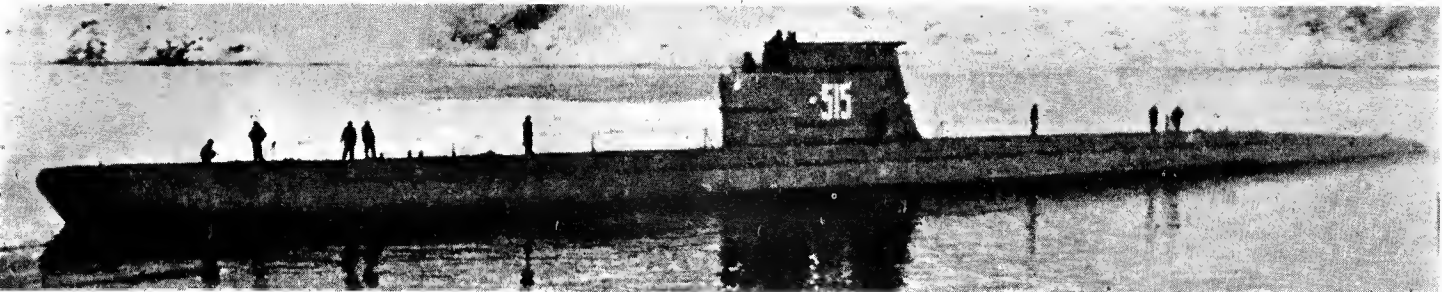
12 "W" Class. Guided Missile Type

Some of the "W" class are reported to be equipped with a special tank on deck for carrying guided missiles and with inclined missile launchers. Others were converted to missile carrying submarines with single or twin cylinders on deck abaft the conning tower. See photograph on page 486 (Addenda).



"G" Class missile submarine No. 783

1962



No. 515

1966, col Borg

Fleet Submarines

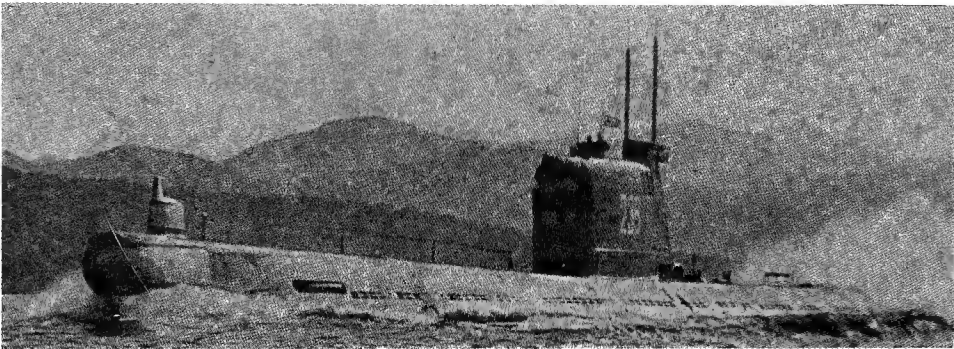
40 "F" Class. Large Attack Type

TCHELJABINSKYI KOMSOMOLETS

No. 238	No. 515	No. 660	No. 911
	No. 533		

Displacement, tons	2 000 surface; 2 300 submerged
Dimensions, feet	300 × 27 × 19
Tubes	8—21 in (20 torpedoes carried)
Main engines	Diesels; 3 shafts; 10 000 bhp = 20 knots surface; Electric motors; 4 000 hp = 15 knots submerged
Complement	70

Improved versions of the "Z" class. Equipped with short.



"F" Class No. 238

1965, col Breyer

25 "Z" Class. Large Oceangoing Type

No. 63	No. 71	No. 328
No. 66	No. 72	No. 958

Displacement, tons	1 900 surface; 2 200 submerged
Dimensions, feet	295 × 26 × 19
Tubes	8—21 in (6 bow, 2 stern). 24 torpedoes carried (or 40 mines)
Main engines	Diesel-electric; 2 shafts Diesels: 10 000 bhp = 20 knots surface; Electric Motors: 3 500 hp = 15 knots submerged
Radius, miles	20 000 to 26 000
Complement	70

Oceangoing type. Completed from 1954 to 1960. General appearance is streamlined with a complete row of rapid flooding holes along the casing. This class was stationed in the Baltic and Far East. The first of the class was laid down in 1951 and most were commissioned during 1954-60. Eighteen were built by Sudomekh Shipyard, Leningrad, in 1952-55 and others at Severodvinsk. Several have been converted to radar pickets.



"R" Class No. 101

1963

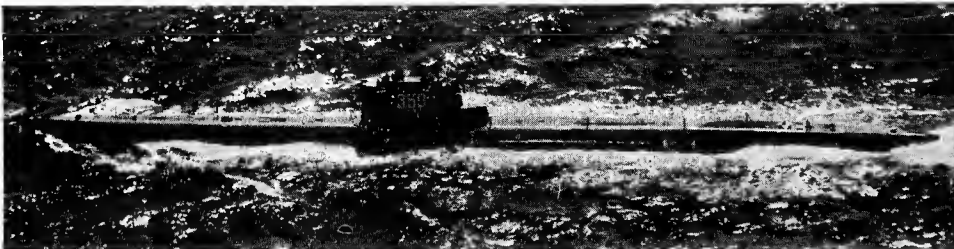
25 "R" Class

No. 101	No. 202	No. 204
---------	---------	---------

Displacement, tons	1 100 surface; 1 600 submerged
Dimensions, feet	246 × 24 × 14.5
Tubes	6—21 in bow
Main engines	Diesels: 4 000 bhp = 18.5 knots surface Electric motors: 2 500 hp = 15 knots submerged
Complement	65

These are of a modified "W" type with modernised superstructure, conning tower, and sonar installation. Reported to number 13 boats by the end of 1962.

No. 23	No. 47	No. 66	No. 75	No. 306
No. 37	No. 51	No. 68	No. 98	No. 329
No. 45	No. 62	No. 72	No. 192	No. 368
				No. 528



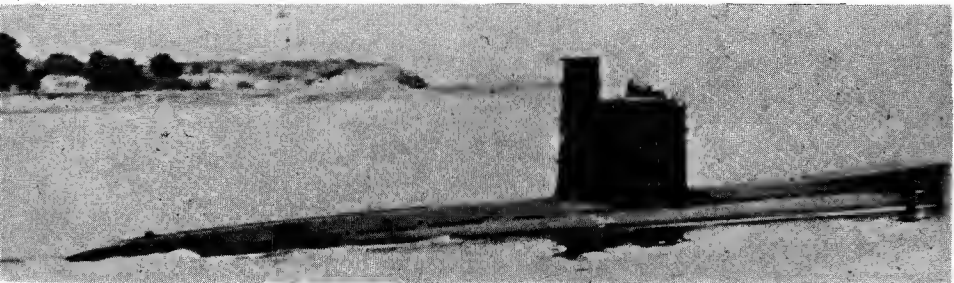
"W" Class No. 350

1961

25 "Q" Class. Medium Range Type

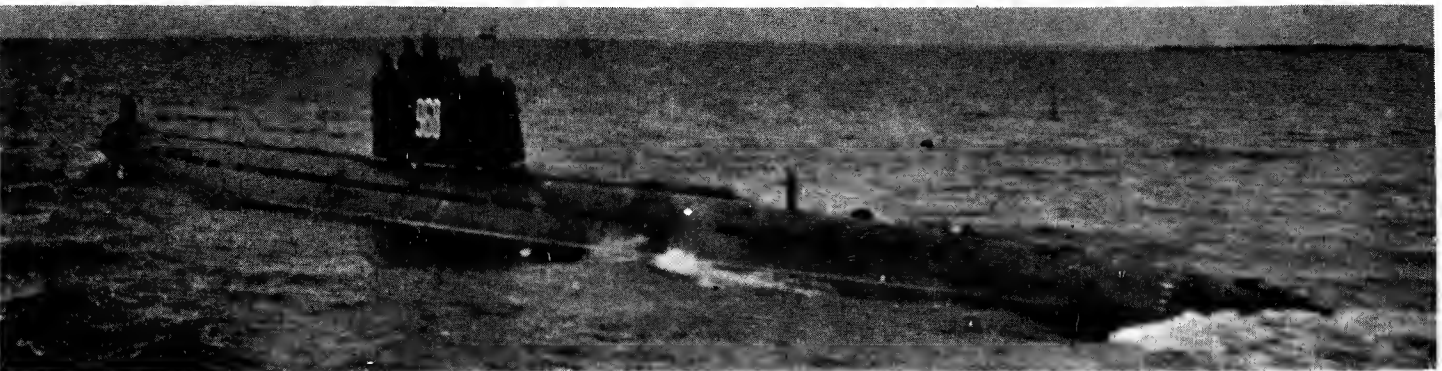
Displacement, tons	650 surface; 740 submerged
Dimensions, feet	185 × 18 × 13
Tubes	4—21 in
Main engines	Diesel: 1 shaft; 3 000 bhp = 18 knots surface Electric motors; 2 500 hp = 16 knots submerged
Oil fuel, tons	50
Radius, miles	7 000 cruising range
Complement	40

Medium range, single screw submarines. Built from 1954 to 1960. Thirteen were constructed in 1955 by Sudomekh Shipyard, Leningrad.



"Q" Class

1965, Col Breyer



No. 958 "Z" Class

1960

Submarines—continued

170 "W" Class. Patrol Type

No. 12	No. 68	No. 244	S 48	S 176
No. 25	No. 78	No. 261	S 77	S 221
No. 28	No. 81	No. 305	S 87	S 222
No. 29	No. 125	No. 350	S 91	S 237
No. 34	No. 148	No. 355	S 173	S 333
No. 66	No. 179	No. 574		
	No. 224	No. 752		

Displacement, tons	1 030 surface; 1 180 submerged
Dimensions, feet	240 x 22 x 15
Tubes	6—21 in (4 bow, 2 stern); 18 torpedoes carried (or 40 mines)
Main engines	Diesel-electric; 2 shafts; Diesels: 4 000 bhp = 17 knots surface; Electric motors: 2 500 hp = 15 knots submerged
Radius, miles	13 000 to 16 500
Complement	60

Medium range submarines built from 1950 to 1957 in yards throughout the Soviet Union. All streamlined. Subdivided into three types, "W", "WF" and "W III". Stationed in considerable numbers in the Baltic, the North, the Black Sea and the Far East. Equipped with snort. Fitted for minelaying.

PHOTOGRAPHS. Photographs of No. 12, No. 25, W.III class, appear in the 1959-60 to 1966-67 editions.

SEVERYANA SLAVYANKA

Displacement, tons	1 000 surface; 1 100 submerged
Dimensions, feet	240 x 22 x 15
Main engines	Diesels: 4 000 bhp = 17 knots surface; Electric Motors: 2 500 hp = 15 knots submerged

Converted "W" class submarines specially fitted out for scientific research. Severyanya is attached to the Soviet Institute for Fisheries and Oceanographic Research. Torpedo compartment converted into a laboratory. Observation portholes, top and bottom echo sounders, sonar, long range searchlight, underwater television camera.

DISPOSALS OF "K" CLASS
The few minelaying submarines of the "K" class which survived the Second World War were deleted from the list in 1963-64.

DISPOSALS OF "SHCH" CLASSES
The 19 submarines of the "Shch IV" class were deleted from the list in 1964. The 50 boats of the "Shch" class, including most of the "Sch" I, II and III classes, having become obsolete and worn out, were scrapped in 1960.

DISPOSALS OF OTHER CLASSES
The 30 old submarines of the "S(C)" class, and the 18 coastal submarines of the "M IV" class were discarded in 1963.
The old ex-German submarines N 27 (ex-U 2529), N 28 (ex-U 3035), N 29 (ex-U 3041) and N 30 (ex-U 3515) of the "XXI" types; S 81 (ex-U 1057), S 82 (ex-U 1058), S 83 (ex-U 1064) and S 84 (ex-U 1305) of the VII type and N 31 (ex-U 2353) of the "XXIII" type, all taken over by the Soviet Navy as war prizes, were in 1963 reported to have been scrapped. For detailed list of disposals of older submarines discarded since the USSR has built so many submarines of her own designs in her own yards, see 1962-63 and earlier editions.

15 "M V" Class

M 269	M 272	M 275	M 278	M 281
M 270	M 273	M 276	M 279	M 282
M 271	M 274	M 277	M 280	M 283

Displacement, tons	350 surface; 420 submerged
Dimensions, feet	167.3 x 16 x 12
Guns	1—45 mm AA; 1 MG
Tubes	2—21 in
Main engines	Diesels: 1 000 bhp = 13 knots surface; Electric Motors: 800 hp = 10 knots submerged
Oil fuel, tons	21
Radius, miles	4 000 at 10 knots surface; 100 at 5 knots submerged
Complement	24

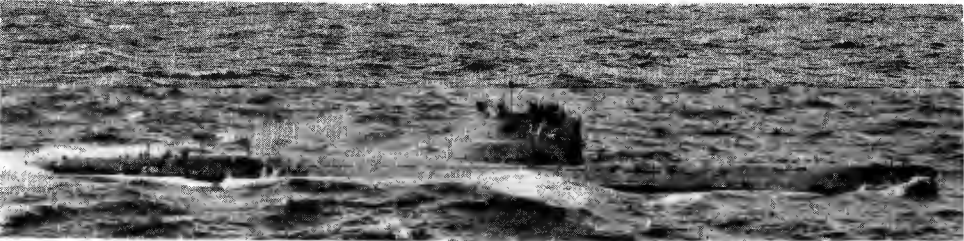
Built from 1946 to 1952. Designed for coastal operations. Some were transported in sections on the Trans-Siberian Railway and assembled at Vladivostock for service in the Pacific. The older boats are of little further fighting value.

DISPOSALS
28 boats of the "MV" class, M 205, 206, 209, 211, 212, 214, 215, 216, 219, 234, 235 and 237 to 253, were for disposal in 1962. M 200, 201, 202, 203, 254, 255, 256, 257 and 258 were deleted from the list in 1963. M 204 in 1964 and M 259 to M 268 in 1966.



"W" Class No. 372

1967, Skyfotos



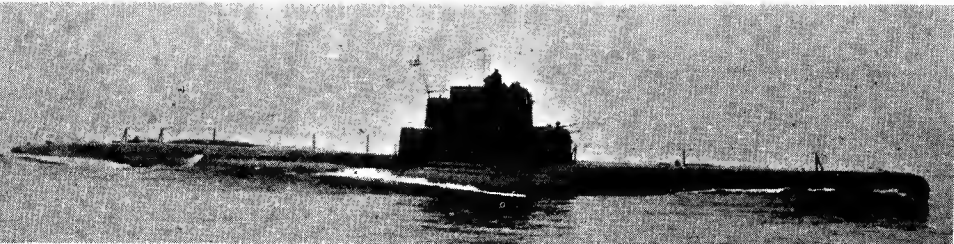
"W" Class

1966, Skyfotos

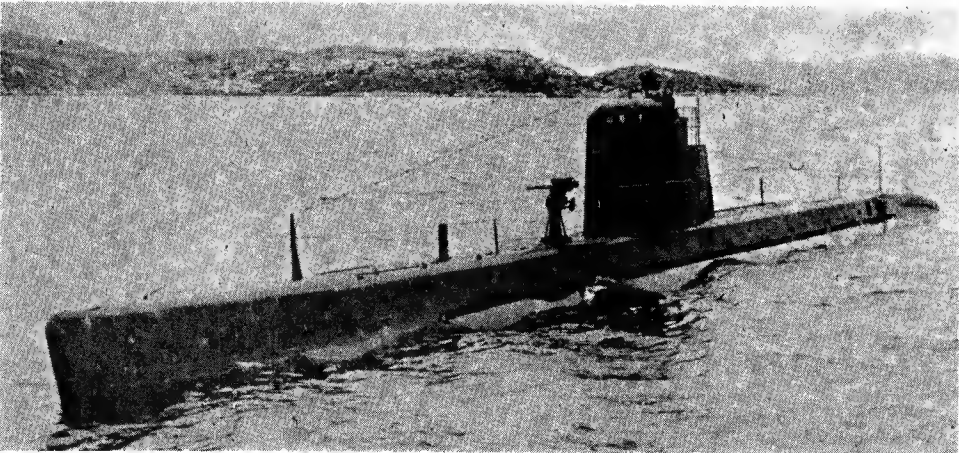


"W" Class

1965, Skyfotos



"W" Class



M V Class

CRUISERS

14 "Sverdlov" Class

ADMIRAL LAZAREV	DZERZHINSKI
ADMIRAL NAKHIMOV	KOSMA MININ
ADMIRAL SENJAVIN	MIKHAIL KUTUSOV
ADMIRAL USHAKOV	MURMANSK
ALEXSANDR NEVSKII	(ex-Zhdanov)
ALEKSANDR SUVOROV	OKTYABRSKAYA
DMITRI DONSKOI	REVOLUTSIYA
DMITRI POZHARSKIY	(ex-Molotovsk)
	SVERDLOV

Displacement, tons	15 450 standard ; 19 200 full load
Length, feet (metres)	656 (200 0) pp, 689 (210 0) oa
Beam, feet (metres)	70 (21 3)
Draught, feet (metres)	24 5 (7 5) max
Armour	Belts 3 9—4 9 in (100—125 mm) ; fwd and aft 1 6—2 in (40—50 mm) ; turrets 4 9 in (125 mm) ; C.T. 5 9 in (150 mm) ; decks 1—2 in (25—50 mm) and 2—3 in (50—75 mm)
Missiles, AA	Twin launcher aft in Dzerzhinski (see Guided Missiles)
Guns, surface	12—5 9 in (150 mm), 4 triple
Guns, dual purpose	12—3 9 in (100 mm), 6 twin
Guns, AA	32—37 mm, 16 twin mounts (see Gunnery)
Torpedo tubes	10—21 in (533 mm), 2 quintuple (see Torpedoes)
Mines	140 to 250 capacity
Boilers	4
Main engines	Geared turbines
	130 000 shp; 2 shafts
Speed, knots	34
Radius, miles	5 000 at 20 knots
Oil fuel (tons)	4 000
Complement	1 050

Of the 24 ships of this class originally projected, 20 keels were laid and 17 hulls were launched from 1951 onwards, but only 14 ships were completed and operational by Dec 1960. There are two slightly different types. *Sverdlov* and others have the 37 mm AA guns near the fore-funnel one deck higher than in later cruisers. Most ships are fitted for minelaying. Mine stowage is on the second deck. It is reported that the number of units in this class is to be reduced by transfer or scrapping.

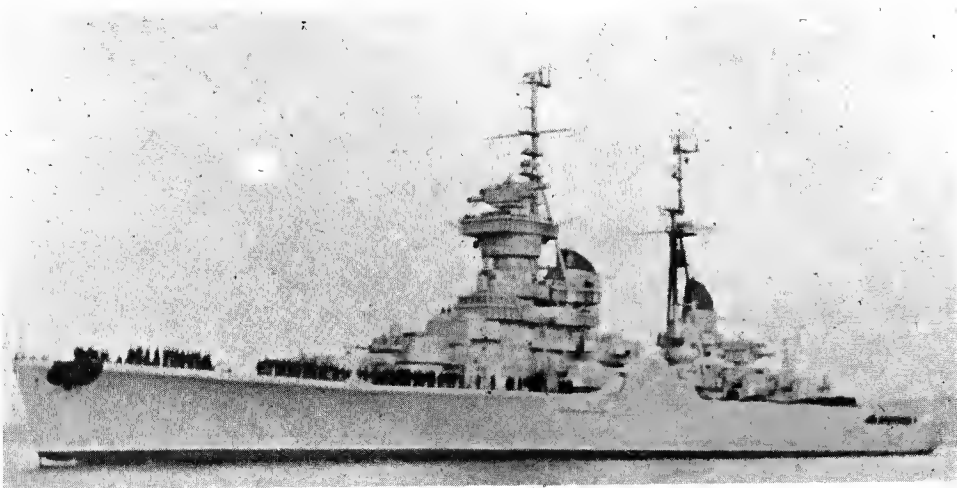
CONSTRUCTION. Originally designed for a displacement of 12,800 tons standard and 17 000 tons full load.

GUIDED MISSILES. In 1961-62 *Dzerzhinski* was fitted with a close range missile twin launcher aft in place of Nio 3 or "X" turret. *Admiral Nakhimov* was not, or is no longer fitted with guided missile launchers.

GUNNERY. *Dzerzhinski* has only nine 6 inch guns in three triple turrets, "X" turret having been replaced by guided missile launcher.

TORPEDOES. *Oktyabrskaya Revolutsia* and *Murmansk* no longer have tubes.

DRAWING. Port elevation and plan. Scale: 128 feet = 1 inch.



MURMANSK

1967

APPEARANCE. The first ships had their anti-aircraft bridge near the fore-funnel one deck higher than in later ships. *Oktyabrskaya Revolutsiya* no longer has torpedo tubes. *Murmansk* has low anti-aircraft bridge near the fore-funnel and no torpedo tubes. *Sverdlov* was refitted with enclosed masts, as in "Kynda" class at Kronstadt in 1966.

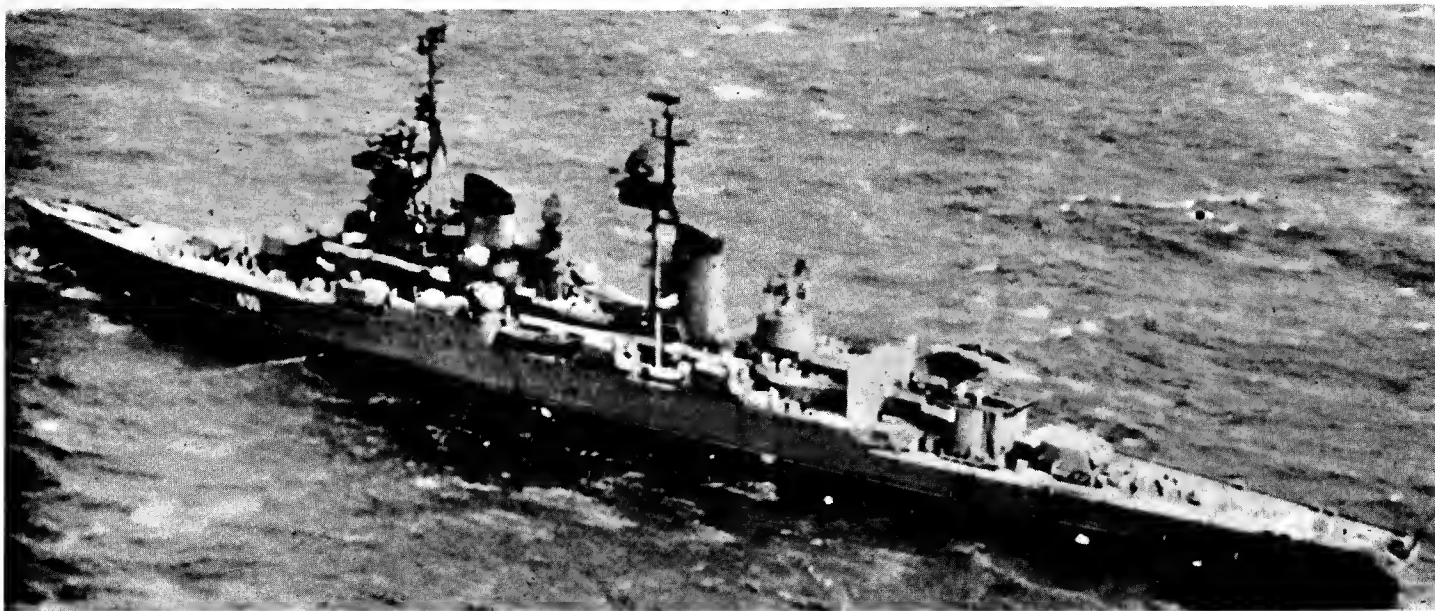
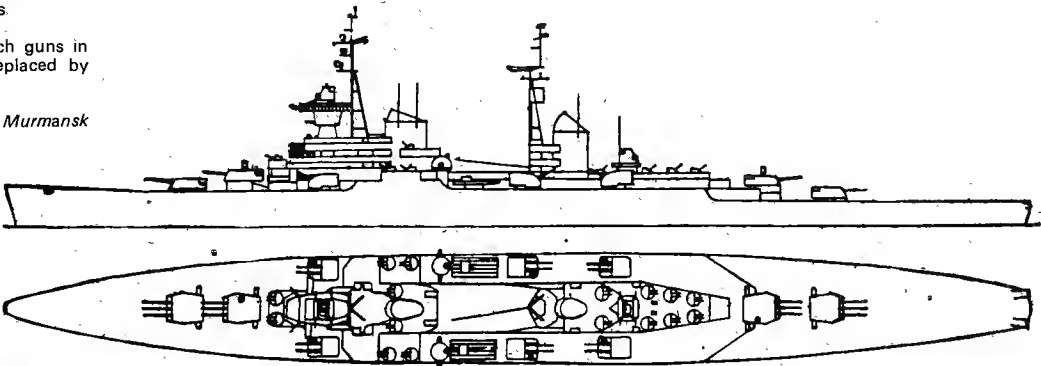
PHOTOGRAPHS. Photographs of *Admiral Ushakov*, *Aleksandr Suvorov* and *Sverdlov* appear in the 1953-54 to 1957-58 editions, of *Oktyabrskaya Revolutsiya* (as *Molotovsk*) in the 1957-58 to 1959-60 editions (also large photograph showing midship details) and in the 1962-63 edition (port bow oblique view), of *Sverdlov* (counter view showing minelaying stern) in the 1961-62 and 1962-63 editions, of *Murmansk* (as *Zhdanov*) in the 1957-58 to 1964-65 editions, of *Dzerzhinski* in the 1965-66 and 1966-67 editions (port quarter view showing twin guided missile launcher), of *Oktyabrskaya Revolutsiya* in the 1961-62 to 1966-67 editions.

PROTECTION. Deep and thick side belts of armour from the fore turret to the after turret, tapering to the bow and the stern.

NOMENCLATURE. The ship first named *Molotovsk* was renamed *Oktyabrskaya Revolutsiya* in 1957, and the ship first named *Zhdanov* was renamed *Murmansk* in 1964.

TRANSFER. *Ordzhonikidze* of this class was transferred to the Indonesian Navy in Oct 1962 and renamed *Irian*.

DISPOSALS. The uncompleted hulls of four "Sverdlov" class cruisers were reported to have been broken up at Leningrad. Several completed ships now surplus to naval requirements are scheduled to be discarded in the near future, and the number of cruisers of this class in commission will gradually be reduced and replaced on active service by the large guided missile armed destroyers or "rocket-cruisers" now being completed.



DZERZHINSKI

1967, col Breyer

Cruisers—continued

3 "Chapaev" Class

KOMSOMOLETS (ex- <i>Chkalov</i>)	KUIBYSHEV ZHELEZNYAKOV
Displacement, tons	11 500 standard; 15 000 full load
Length, feet (metres)	656 (200.0)
Beam, feet (metres)	64.7 (19.7)
Draught, feet (metres)	21 (6.4)
Guns, surface	12—5.9 in (150 mm), 4 triple
Guns, dual purpose	8—3.9 in (100 mm), 4 twin
Guns, AA	28—37 mm, 14 twin
Mines	100 to 200 capacity
Boilers	6
Main engines	Gearred turbines, with diesels for cruising speeds; 113 000 shp
Speed, knots	34
Radius, miles	4 500 at 20 knots
Oil fuel (tons)	3 500
Complement	834

Laid down in 1939-40. Launched during 1941-47. All work on these ships was stopped during the war, but was resumed in 1946-47. Completed in 1948-50. Catapults were removed from all ships of this type. *Zheleznyakov* serves as a training ship.

GUNNERY. Turret guns are in separate sleeves allowing independent elevation to at least 50 degrees.

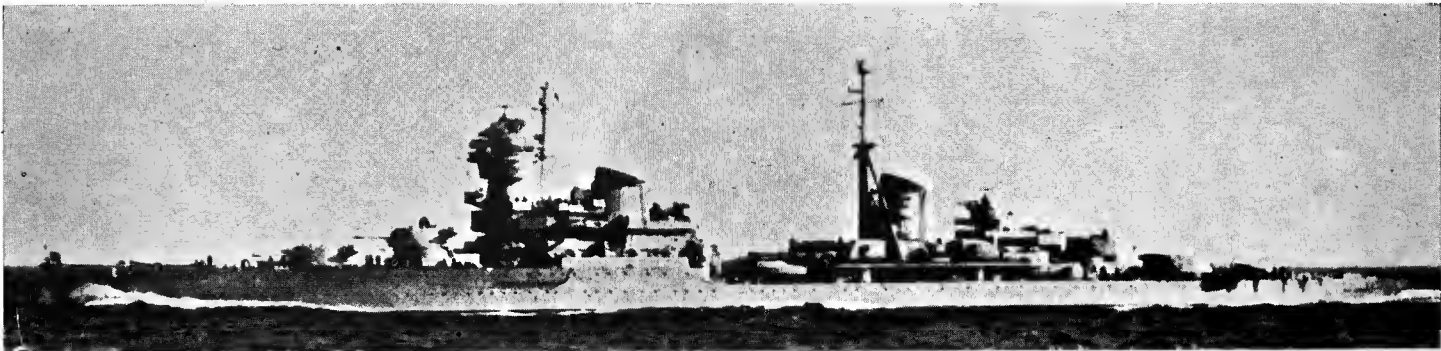
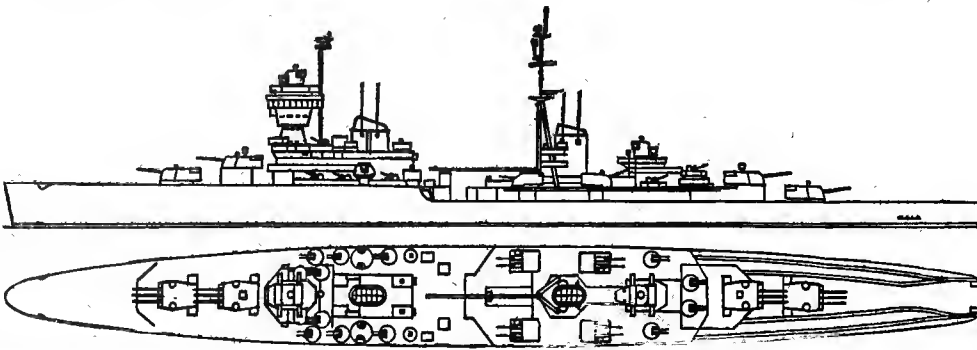
APPEARANCE. Heavy director on control tower, pole foremast and tripod mainmast forward of after funnel. Vertical funnels. Higher freeboard and funnels than "Kirov" class. Resemble "Sverdlov" class but forecastle deck breaks abreast forefunnel instead of at quarter deck.

NOMENCLATURE. *Chkalov* was reported to have been renamed *Komsomolets* in 1961.

DRAWING. Port elevation and plan. Scale. 128 feet = 1 inch.

PHOTOGRAPHS. A port quarter view of *Zheleznyakov* appears in the 1952-53 to 1957-58 editions.

DISPOSALS
Frunze and *Chapaev* of this class were discarded.



ZHELEZNYAKOV

Antonov Rogov 1959

2 "Kirov" and 1 "Maksim Gorki" Types

Displacement, tons	8 800 standard; 11 500 full load
Length, feet (metres)	613.5 (187.0)pp; 626.7 (191.0)oa
Beam, feet (metres)	59 (18.0)
Draught, feet (metres)	20 (6.1) max
Armour	Side 3 in (75 mm); deck 2 in (50 mm); C.T. and gunhouses 3.9 in (100 mm)
Guns, surface	9—7.1 in (180 mm)
Guns, dual purpose	8—3.9 in (100 mm)
Guns, AA	16—37 mm; 6—13 mm
Torpedo tubes	6—21 in (533 mm)
Mines	60—90 capacity
Boilers	6 Yarrow or Normand
Main engines	Gearred turbines, with diesels for cruising speeds; 110 000 shp
Speed, knots	34
Radius, miles	3 500 at 19 knots
Oil fuel (tons)	2 500
Complement	734

Design and technical direction of construction by Ansaldo. Of this class *Ordzhonikidze* under construction at Nikolayev, was wrecked by high explosives before the enemy occupied that port in Aug 1941.

APPEARANCE. *Kirov* and *Molotov* had very long forecastle, heavy tripod mast stepped abaft forebridge, light tripod stepped abaft second funnel, very large funnels. Remaining vessels had high director tower on forebridge, light tripod foremast abaft bridge, heavy tripod mainmast stepped abaft second funnel, smaller funnels, and generally lighter appearance.

Name
KALININ
KIROV
SLAVA (ex-*Molotov*)

Builders
Komsomolsk Shipyards
Putilov DY
Marti Yard, Nikolaye

Laid down
1939
1934
1935

Launched
1945
1 Dec 1936
23 Feb 1939

Completed
1947
26 Sep 1938
1944

PHOTOGRAPHS. Starboard bow and quarter views of *Kirov*, showing her No. 961, appear in the 1960-61 to 1962-63 editions.

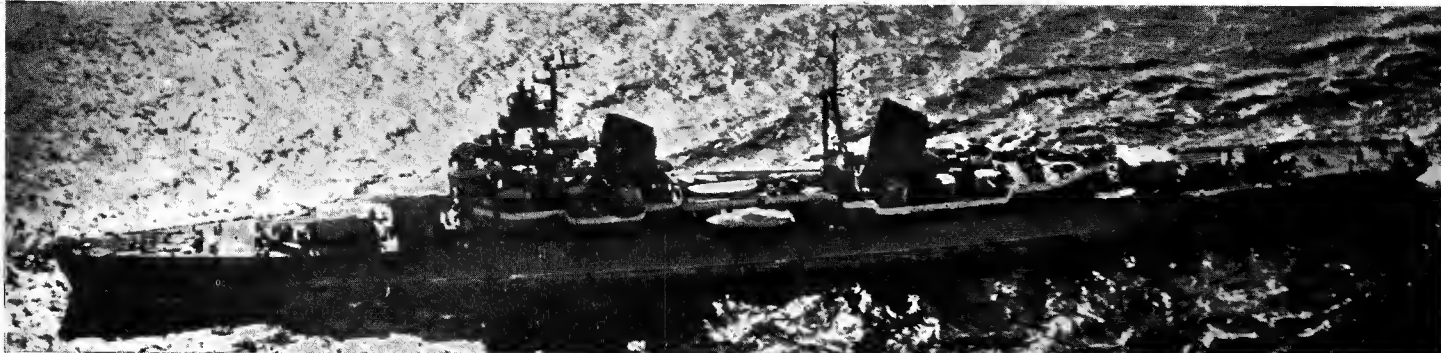
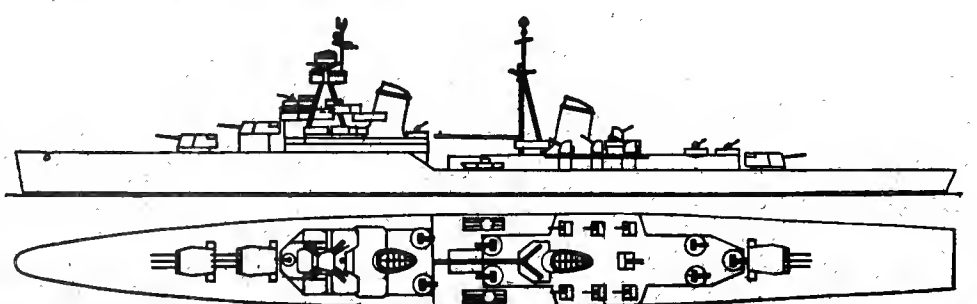
GUNNERY. Triple guns are mounted in one sleeve and are incapable of individual elevation. Maximum elevation 40 degrees.

NOMENCLATURE. *Molotov* was reported to have been renamed *Slavia* in 1962.

DRAWING. Port elevation and plan of *Kirov*. Scale. 128 feet = 1 inch.

TRANSFER. *Kaganivotch* was reported to have been transferred to the Chinese Communist Navy.

DISPOSALS
Voroshilov is reported to have been scrapped, *Maksim Gorki* disarmed and in a bad state. *Kalinin* and *Slava* are no more than training hulks.



KIROV

1959

GUIDED MISSILE ARMED DESTROYERS

5 "Kresta" Class

No. 626

Displacement, tons 6 000 estimated
Length, feet (metres) 508.5 (155.0)
Beam, feet (metres) 55.8 (17.0)
Draught, feet (metres) 20 (6.1)
Missiles, surface 2 twin launchers
Missiles, AA 2 twin launchers
A/S weapons 2 12-barrelled launchers;
2 6-barrelled launchers

Torpedo tubes 4 (two twin)
Aircraft Helicopter
Guns 4—57 mm (2 twin)
Main engines 100 000 shp
Speed, knots 35
Complement 400

New construction dual purpose anti-submarine warfare and guided missile armed destroyer leaders or cruiser

frigates. The design is a combination of that of the "Kashin" and "Kynda" classes and a logical follow-on to the "Kashin" class. Provided with a helicopter hangar and flight apron. Five ships of the class were reported building at the Zhdanov Shipyard, Leningrad. The prototype ship was laid down in Sep 1964, launched in 1965 and carried out sea trials in the Baltic in Feb 1967. The second and third ships were launched in 1966. "Kresta" is the NATO designation for the class.



KRESTA Class Prototype

1967

6 "Kashin" Class

No. 11 No. 080 OBRAZTSOVYI No. 363
No. 078 No. 296 No. 381
Displacement, tons 4 800 standard; 6 000 full load
Length, feet (metres) 492 (150.0)
Beam, feet (metres) 51 (15.5)
Draught, feet (metres) 19 (5.8)
Missiles, AA Twin launchers in "B" and "X" positions
A/S 2—12 barrel and 2—6 barrel rocket launchers

Guns, AA 4—3.3 in (85 mm), 2 twin, "A" and "Y" positions
Torpedo tubes 5—21 in (533 mm) quintuple, amidships
Main engines 4 sets gas turbines
Speed, knots 100 000 shp
35

A new class of guided missile armed destroyers with anti-aircraft and anti-submarine propensities. Four

separate towers carrying radar for missile guidance, anti-aircraft direction, search and gunnery direction. Reported to total six completed units, including first two built in the Baltic and two in the Black Sea, but the class is likely to run into series production. Ships of the "Kashin" and "Kynda" and "Krupnyi" classes are officially classed as "rocket-cruisers".

PHOTOGRAPHS. A starboard broadside view of No. 07B appears in the 1964-65 and 1965-66 editions.



KASHIN Class No. 11

1966, col Breyer

4 "Kynda" Class

VARYAG (621) No. 299 No. 641
No. 202 No. 343 No. 898
No. 239
Displacement, tons 4 300 standard; 5 200 full load
Length, feet (metres) 475 (144.8)
Beam, feet (metres) 53 (16.1)
Draught, feet (metres) 19 (5.8) max
Aircraft Apron for helicopter on stern
Missiles, surface 2 quadruple mounts, 1 fwd, 1 aft
Missiles, AA 1 twin launcher on forecastle
A/S 2—12 barrel rocket launchers on forecastle

Guns, AA 4—3.3 in (85 mm), 2 twin
Torpedo tubes 6—21 in (533 mm) 2 triple, amidships
Boilers 4 high pressure
Main engines 2 sets combined-steam and gas turbines; 85 000 shp; 2 shafts
Speed, knots 35
Complement 390

No. 89B was laid down in June 1960, launched in Apr 1961 at Zhdanov Shipyard, Leningrad, and completed in June 1962. The second ship was launched in Nov

1961 and fitted out in Aug 1962. Two enclosed towers, instead of masts, stepped forward of each raked funnel. Two screws and two rudders. Helicopter landing apron on the stern.

SERIAL NUMBERS. "Kynda" class destroyers bearing all the numbers listed above have been observed, but there are believed to be only four ships.

PHOTOGRAPHS. A starboard broadside aerial view of No. 898 appears in the 1963-64 and 1964-65 editions, and a port broadside surface view of No. 202 in the 1965-66 and 1966-67 editions.



KYNDAL Class No. 299

1967

Guided Missile Armed Destroyers— continued

10 "Krupny" Class

No. 185	No. 372	No. 700
No. 229	No. 526	No. 703
Displacement, tons	3 650 standard; 4 650 full load	
Length, feet (metres)	453 (138-0)	
Beam, feet (metres)	44 (13-4)	
Draught, feet (metres)	16-5 (5-0)	
Missiles, surface	2 launchers; 1 forward, 1 aft	
Guns, AA	16-57 mm, 4 quadruple; 2 amidships, 1 forward, 1 aft	
Torpedo launchers	6 (2 triple) for A/S torpedoes	
Boilers	4 high pressure water tube	
Main engines	Geared steam turbines	
	80 000 shp; 2 shafts	
Speed, knots	34	
Complement	360	

Flush-decked destroyers designed to carry guided missiles. Helicopter spot landing apron on the stern. Initial construction in 1958 at Leningrad. There were originally to have been twelve vessels but construction discontinued in favour of later types, and the class numbers ten units including *Gremyashchy* and *Napristy*.



KRUPNY Class No. 372

1965, Captain Aldo Fraccaroli

PHOTOGRAPHS. A port broadside aerial view of No. 526 appears in the 1961-62 to 1963-64 editions, a port broadside surface view of No. 700 in the 1962-63 and 1963-64 editions, a starboard bow surface view of No.

700 in the 1962-63 to 1964-65 editions, and a starboard broadside view in the 1963-64 to 1965-66 editions, and a starboard quarter surface view of No. 703 in the 1962-63 to 1966-67 editions.

6 "Kildin" Class

No. 303	No. 925
Displacement, tons	3 000 standard; 4 000 full load
Length, feet (metres)	426-5 (130-0)
Beam, feet (metres)	42-7 (13-0)
Draught, feet (metres)	15-5 (4-7)

Missiles, surface	1 launcher aft
A/S	2-16 barrel rocket launchers on forecastle
Guns, AA	16-45 mm, 4 quadruple
Boilers	4 high pressure
Main engines	Geared turbines
	80 000 shp; 2 shafts

Speed, knots	35
Complement	300

Large destroyers with the "Kotlin" type hull, but redesigned as guided missile armed destroyers with a launcher installed in place of the after gun mountings. Identified by NATO designation as the "Kildin" class.



KILDIN Class

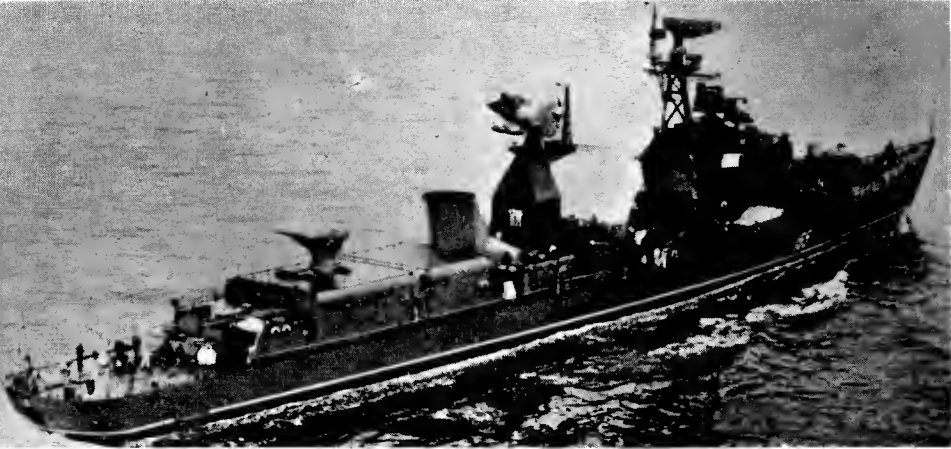
1964

2 "Kotlin" SAM Class

No. 165	No. 935
Displacement, tons	2 850 standard; 3 885 full load
Length, feet (metres)	425 (129-5) oa
Beam, feet (metres)	41-5 (12-6)
Draught, feet (metres)	16 (4-9) max
Missiles, AA	1 twin launcher aft
Guns, dual purposa	2-3-9 in (100 mm), twin
Guns, AA	4-57 mm, quadruple
A/S	6 side thrown DC projectors
Boilers	4 high pressure
Main engines	Geared turbines
	80 000 shp; 2 shafts
Speed, knots	36
Complement	285

"Kotlin" class modified with a surface-to-air missile launcher in place of the main twin turret aft and anti-aircraft guns reduced to one quadruple mounting. Two of the "Kotlin" class have been converted with surface-air-missiles, first in 1960, second in 1966.

PHOTOGRAPHS. A starboard bow view appears in the 1963-64 to 1965-66 editions.



KOTLIN SAM Class No. 165



KOTLIN SAM Class No. 935

1966, col Breyer

DESTROYERS

30 "Kotlin" Class

BESSLEDNYI BURLIVYI NASTOYCHIVYI PLAMENNYI		SPRAVETLIVYI SVETLIVYIARE VDOKHNOVENNYII VOZMUSHCHENNY	
No. 32	No. 77	No. 79	No. 95
No. 75	No. 78	No. 82	No. 487
		No. 86	No. 502
			No. 514
			No. 774
			No. 858
Displacement, tons		2 850 standard, 3 885 full load	
Length, feet (metres)		425 (129.5) oa	
Beam, feet (metres)		41.5 (12.6)	
Draught, feet (metres)		16 (4.9) max	
Guns, dual purposa		4—3.9 in (100 mm), 2 twin	
Guns, AA		16—45 mm, 4 quadruple	
A/S		6 side thrown DC projectors	
Torpedo tubes		10—21 in (533 mm)	
Mines		80 capacity	
Boilers		4 high pressure	
Main engines		Geared turbines	
Speed, knots		80 000 sgp, 2 shafts	
Complement		36	
		285	

Improved versions of the "Tallin" type with similar hulls but differing features. These fast anti-aircraft and anti-submarine destroyers, built in 1954-57, were designed for mass production. *Nastoychiviy* means Persistent.

MODERNISATION. Many of the "Kotlin" class have been modernised, with extensive modifications in anti-submarine and anti-aircraft armament. Several fitted with helicopter platform abaft the after mounting. Two fitted with surface-to-air twin missile launcher aft, installed atop a deckhouse in place of the after guns; with missile radar and tower fitted forward of the after funnel, see previous page.



KOTLIN Class No. 858 with helicopter platform aft 1965, col Breyer



KOTLIN Class No. 0.487 1965, Skyfotos

ANTI-SUBMARINE WARFARE. The six depth charge throwers in *Nastoychiviy* are welded to the deck, three on each beam at the stern, affording only transverse throw. They are apparently charged from deck magazines.

PHOTOGRAPHS. Another photograph of a "Kotlin", a port near broadside surfaca view at sea, appears in the 1957-58 to 1960-61 editions, and starboard broadside view of No. 82 in the 1958-59 to 1964-65 editions.



KOTLIN Class No. 774 Skyfotos

"Tallin" Prototype

NEUSTRASHIMYI		Mines	70 to 90 according to size
		Boilers	4 water tube
		Main engines	Geared turbines
			100 000 shp; 2 shafts
Displacement, tons		Speed, knots	38
Length, feet (metres)		Radius, miles	2 500 at 18 knots
Beam, feet (metres)		Oil fuel (tons)	1 000
Draught, feet (metres)		Complement	340
Guns, dual purposa		A multi-purpose anti-aircraft, anti-submarine and mine-laying flushdecked prototype destroyer for fleet escort and flotilla leader duties. <i>Neustrashimiy</i> means Unfear-ing	
Guns, AA			
A/S			
Torpedo tubas			

GUNNERY. The 3.9 inch (100 mm) guns in two twin turrets are similar to those mounted as secondary armament in the "Sverdlov" class cruisers, including firing directors and control position, fully stabilised, forming a part of the bridge. This was the first time such an armament had been contrived in a ship of destroyer size, an experiment in top weight.

CLASS. It is reported that there is only a single "Tallin" class ship, a prototype for the "Kotlin" class, but she has had several different pennant numbers, including No. 76, see photograph in the 1956-57 to 1960-61 editions.



NEUSTRASHIMYI 1961, Skyfotos

Destroyers—continued

55 "Skory" Class

BESSMENNYI **BEZUKORIZNENNYI**

Normally in the Black Sea

OTCHAYANNYI **OZHESTOCHENNYI**
OTVETSTVENNYI **OZHIVLENNYI**

Normally in the Arctic

SERIDTYI **SPOSOBNYI**
SERIOZNYI **STATNYI**
SMELYI **STEPENNYI**
SMOTRYASHCHYI **STOJKYI**
SOKRUSHITELNYI **STREMITELNYI**
SOLIDNYI **SUROVYI**
SOVERSHENNYI **SVOBODNYI**

Normally in the Baltic

VDUMCHIVYI **VRAZUMITELNYI**

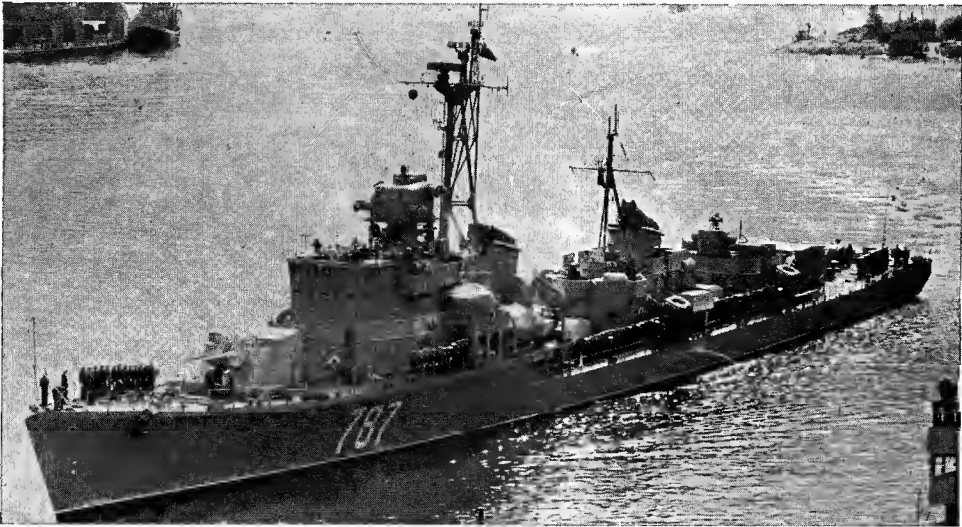
Normally in the Far East

Displacement, tons 2 600 standard; 3 500 full load
Length, feet (metres) 393.7 (120.0) pp; 420 (128.0) oa
Beam, feet (metres) 41 (12.5)
Draught, feet (metres) 15 (4.6)
Guns, surface 4—5.1 in (130 mm), 2 twin
Guns, AA 2—3 in (76 mm); 7—37 mm
 (8—37 mm, twin mounts in some)
 see *Modernisation*
A/S 4 DCT
Torpedo tubes 10—21 in (533 mm)
Mines 80 capacity
Boilers 4 high pressure
Main engines Geared turbines
 70 000 shp; 2 shafts
Speed, knots 36
Radius, miles 4 000 at 15 knots
Complement 260

There were to have been 85 destroyers of this class, but construction beyond 75 units is reported to have been discontinued in favour of later types of destroyers, and the number has been further reduced to 55 by transfers to other countries, translations to other types, and disposals

SERIAL NUMBERS. There are now tactical "500 and 700" series. Numbers observed include 580, 787, 789.

GUNNERY. Equipped with modern target finding and gun sighting radar for the 5.1 inch guns.



SVOBODNYI

1960

NOMENCLATURE. The names of "Skory" class destroyers are apparently based on their fleet assignment. Those in the Black Sea have names beginning with B, those in the Northern Fleet have names beginning with O, those in the Baltic have names beginning with S and those in the Pacific have names beginning with V. This is the only class to which names appear to be applied to indicate fleet designation. Whether the name is altered with a change in fleet assignment is not clear, but it seems that this might be the case when the change is permanent.

APPEARANCE. There are three differing types in this class, the anti-aircraft guns varying with twin and single mountings; and two types of foremast, one vertical with all scanners on top and the other with one scanner on top and one on a platform half way.

MODERNISATION. Many ships of the "Skoryi" class have been modified under a fleet rehabilitation and

modernisation programme with extensive alterations to anti-aircraft armament, electronics, and anti-submarine weapons. A number of ships have had "A" turret suppressed, with A/S launchers in lieu and two twin 57 mm AA guns abreast the bridge, director removed and local control fitted aft for "Y" mounting.

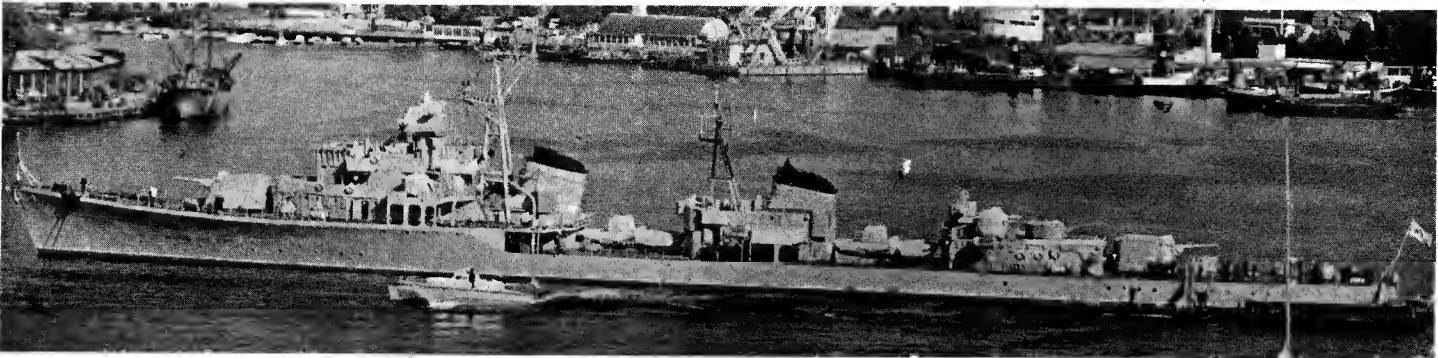
PHOTOGRAPHS. Photographs of *Stepennyi*, *Sposobnyi* and *Surovyi* appear in the 1954-55 to 1957-58 editions, a large broadside view of *Smotryashchy* in the 1957-58 to 1959-60 editions, a starboard bow view of *Ozhestochennyi* in the 1957-58 to 1962-63 editions, a port broadside view of *Otchayannyi* in the 1958-59 to 1962-63 editions, a port bow oblique aerial view of *Svobodnyi* (No. 14) and a starboard broadside surface view of *Otretsvennyi* in the 1957-58 to 1966-67 editions.

TRANSFERS. Of this class *Skoryi* and *Smetlivyi* were transferred to the Polish Navy in 1957-58. Two were transferred to the Egyptian Navy in 1956. Four more units were transferred to the Indonesian Navy in 1959.



SVOBODNYI

1967



OTCHAYANNYI

Added 1967

ESCORTS

10 "Mirka" Class

No. 67	No. 195	No. 166
Displacement, tons	900 light (approx)	
Length, feet (metres)	262 (79.9) oa	
Beam, feet (metres)	29.5 (9.0)	
Draught, feet (metres)	9.2 (2.8)	
A/S	4—12 barrel rocket launchers	
Guns, AA	4—3 in (76 mm) 2 twin	
Torpedo tubes	5 anti-submarine (see notes)	
Main engines	Gas turbines	
Speed, knots	28	

Successors and anti-submarine versions of the "Petya" class, of similar design, but with teething problems eradicated. Two built in the Baltic, three others built at Kaliningrad in 1964. Two ships fitted with two quintuple 16 inch A/S torpedo tubes instead of rocket launchers aft, the forward rocket launchers being retained.



"Mirka" Class No. 166 1966

20 "Petya" Class

No. 4	No. 418
Displacement, tons	1 050 standard; 1 200 full load
Length, feet (metres)	250 (76.2) wl; 262.5 (80.0) oa
Beam, feet (metres)	32 (9.8)
Draught, feet (metres)	9.8 (3.0)
A/S	4—16 barrel rocket launchers
Guns, dual purpose	4—3.3 in (85 mm) 2 twin
Torpedo tubes	5—21 in (533 mm)
Main engines	2 diesels, total 4 000 hp 2 gas turbines, total 10 000 hp 2 shafts
Speed, knots	30

Escort patrol vessels with a low wide funnel. The first ship reported to have been completed in 1961. Built by Kaliningrad, Nikolaiev. Fitted with two mine rails.



"Petya" Class No. 4 1965, col Breyer

12 "Kola" Class

DOBLESTNY	DZERSKI	No. 622
DOSTOINI	DZGUTSHI	No. 632
DRUSHNY	DZIVUTSHI	No. 639
DSKARKI	DZOSTKI	No. 652
Displacement, tons	1 500 standard; 2 000 full load	
Length, feet (metres)	295 (90.0) pp; 305 (93.0) oa	
Beam, feet (metres)	32.8 (10.0)	
Draught, feet (metres)	11.5 (3.5)	
Guns, dual purpose	4—3.9 (100 mm) single	
Guns, AA	4—37 mm	
A/S	DCT's and racks	
Torpedo tubes	3—21 in (533 mm)	
Boilers	2	
Main engines	Geared turbines 30 000 shp; 2 shafts	
Speed, knots	31	
Complement	190	

In design this class of flushdecked destroyer escort appears to be a combination of the former German "Elbing" type torpedo boat destroyers, with a similar hull



"Kola" Class No. 652 form, and of the earlier Soviet "Birds" class frigates. The four 3.9 inch guns were mounted as in the "Gordyi" class destroyers. It is reported that eight of this class are in the Baltic and Nos. 622, 632, 639 and 652 in the Far East. NOMENCLATURE. The last five names are also rendered as Zharki (Dskarki), Zherski (Dzerski), Zhgutshi (Dzgutsh), Zhivutshi (Dzivutshi) and Zhostki (Dzoskti).

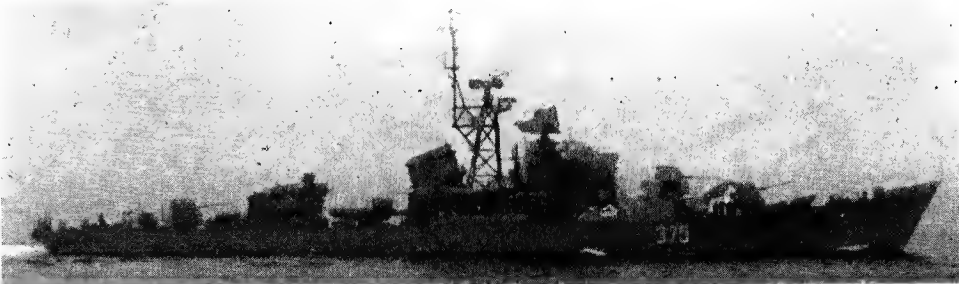
50 "Riga" Class

No. 50	No. 162	No. 324	No. 645
No. 54	No. 168	No. 375	No. 651
No. 55	No. 202	No. 582	No. 656
No. 155	No. 215	No. 642	
Displacement, tons	1 200 standard; 1 600 full load		
Length, feet (metres)	278.5 (84.9) pp; 295 (90.0) oa		
Beam, feet (metres)	31.5 (9.6)		
Draught, feet (metres)	11 (3.4)		
Guns, dual purpose	3—3.9 in (100 mm) single		
Guns, AA	3—37 mm		
A/S	4 DC projectors		
Torpedo tubes	3—21 in (533 mm)		
Boilers	2		
Main engines	Geared turbines 25 000 shp; 2 shafts		
Speed, knots	28		

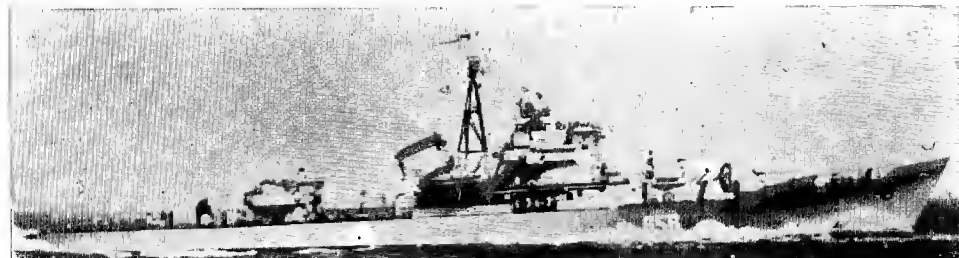
Successors to the "Kola" class frigates, of which they are lighter and less heavily armed but improved versions. Fitted with mine rails. A photograph of No. 645 appears in the 1956-57 to 1962-63 editions, of No. 168 in the 1962-63 to 1965-66 editions.

APPEARANCE. This is class divided into two types with different scheme of masting construction, see photographs.

DISPOSALS OF OLDER FRIGATES
The three of the improved "Birds" class, *Albatros*, *Chaika* (Seagull), and *Krechet* (Buzard); the seven of the "Birds" class, *Berkut* (Golden Eagle), *Grif* (Griffin), *Kondor*, *Korshun* (Kite), *Orël* (Eagle), *Voron* (Raven) and *Yastreb* (Hawk); and the two Ansaldo type vessels, *Dzerzhinski* (ex-PS 8) and *Kirov* (ex-PS 26), were deleted from the list on account of age, obsolescence or being worn out.



Later "Riga" Class No. 375 1966, col Breyer



"Riga" Class No. 656 Sergei Romanov

SUPPORT SHIPS

Nuclear Support Type
3 "Ugra" Class

No. 82

Displacement, tons 6 000 light; 9 000 full load
Length, feet (metres) 370 (112.8) pp; 420 (128.0) oa
Beam, feet (metres) 65 (19.8)
Draught, feet (metres) 20 (6.1)
Aircraft Provision for helicopter
Guns, dual purpose 8—3.3 in (85 mm), 4 twin mounts, 2 forward, 2 aft
Main engines Diesels, 7 000 hp, 2 shafts
Speed, knots 17

Support and escort ships of the maintenance and repair, supply and depot type, probably for servicing nuclear powered submarines. Built on warship lines. Equipped with workshops and staterooms. Provided with a helicopter platform. Fitted with comprehensive radar. Carries a large derrick to handle torpedoes and warheads. Has mooring points in hull about 100 feet apart, but has side doorways, possibly for coastal craft and submarines.



No. 82

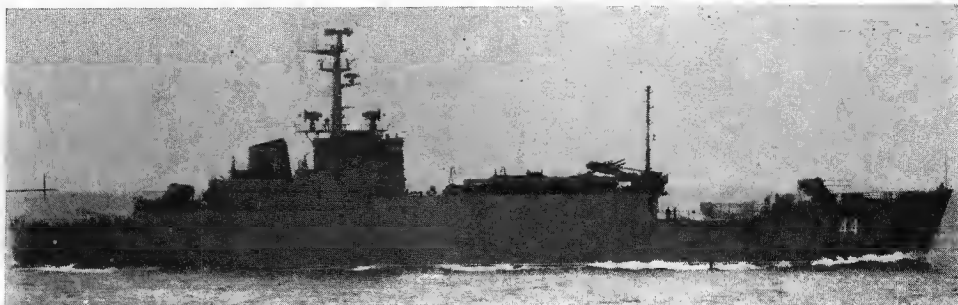
1964, Skyfotos

Missile Supply Type
2 "Lama" Class

No. 44

Displacement, tons 5 000 light; 7 000 full load
Length, feet (metres) 330 (100.0) pp; 370 (112.8) oa
Beam, feet (metres) 60 (18.3)
Draught, feet (metres) 19 (5.8)
Guns, dual purpose 8—57 mm, 2 quadruple, 1 forward, 1 aft
Main engines Diesels, 5 000 hp, 2 shafts
Speed, knots 15

Support and escort ship of the depot and freighting type. Her features indicate a possible missile supply role. Engines sited aft to allow for a very large and high hangar or hold amidships for carrying missiles or weapon spares. The main erection is about 12 feet high above the main deck. There are doors at the forward end with rails leading in. This is surmounted by a turntable gantry or travelling cranes for transferring armaments to combatant ships.



No. 44

Added 1964

PM 131

Displacement, tons 5 000 light; 7 000 full load
Length, feet (metres) 330 (100.0) pp; 370 (112.8) oa
Beam, feet (metres) 60 (18.3)
Draught, feet (metres) 19 (5.8)
Guns, AA 8—57 mm, 2 quadruple, 1 on the forecandle, 1 on the break of the quarter deck
Main engines Diesels, 5 000 bhp 2 shafts
Speed, knots 15

Support and escort ship for serving missile armed ships. Can apparently be used for salvage and towing. Mooring points along the hull for low vessels such as submarines to come alongside. There appears to be a turntable on the deck, which is built up 2 feet above the main deck. The two cranes are in the stowed position and there appear to be pulleyed lifting arrangements, apparently intended to service the well deck and overside. The well deck is about 40 feet long, enough for a missile to fit horizontally before being lifted vertically for loading in submarines.



PM-131

1964, Skyfotos

Oceangoing Support Type
6 "Don" Class

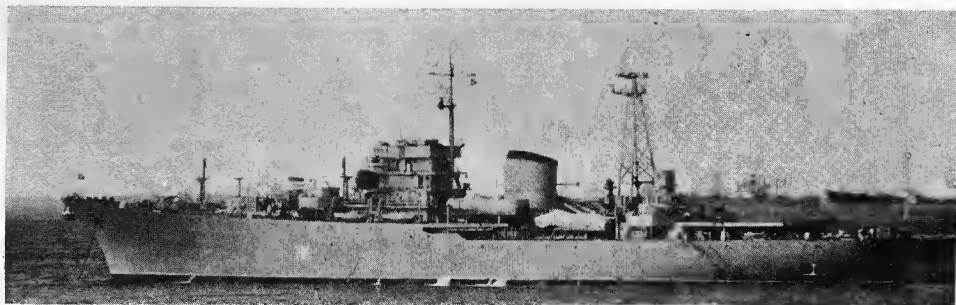
DMITRI GALKIN
FEDOR VIDYAEV
MAGOMET GADZHIEV

NIKOLAI STOLBOV
VASILII VERESOVII
VIKTOR KOTELNIKOV

Displacement, tons 4 750 standard; 6 000 full load
Length, feet (metres) 426.5 (130.0)
Beam, feet (metres) 49 (14.9)
Draught, feet (metres) 17 (5.2)
Aircraft Provision for helicopter in No. 701
Guns, dual purpose 4—3.9 (100 mm)
Guns, AA 8—45 mm
Mines 80 capacity
Main engines Diesels
Speed, knots 20
Complement 300

Support ships, all named after officers lost in WW II. The design is interesting as a hybrid. It has been described as cruiser, frigate, minelayer, training ship, escort vessel, supply ship, and depot ship. *Victor Kotelnikov* is submarine tender, Nos. include 105, 549, 701.

Another photograph of the "Don" class, showing a fully gunned ship forward and aft instead of the modified version with helicopter deck illustrated herewith, appears in the 1960-61 to 1964-65 editions.



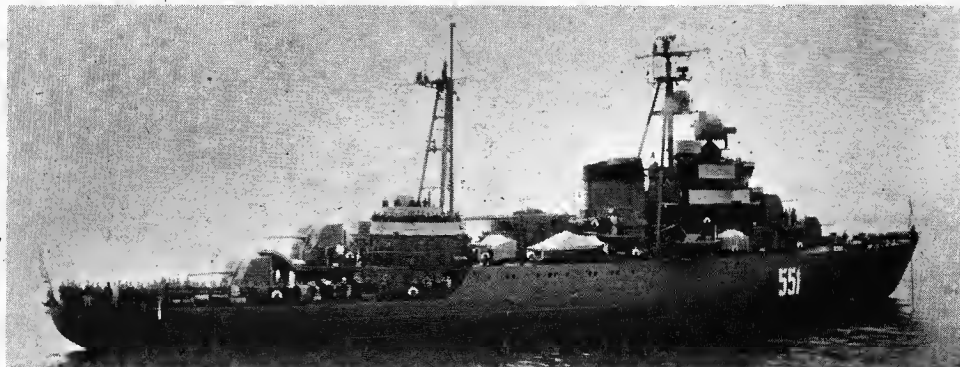
"Don" Class No. 701

Added 1965, courtesy Mrs. Ruth Buckler

Oceangoing Escort Type
1 "Purga" Class

Displacement, tons 2 250 standard; 3 000 full load
Length, feet (metres) 325 (99.0)
Beam, feet (metres) 40 (12.2)
Draught, feet (metres) 17 (5.2)
Guns, dual purpose 4—3.9 in (100 mm) singles
Guns, AA 8—37 mm, twin; 4—25 mm, twin
Mines 50 capacity
Main engines Diesel
Speed, knots 18
Complement 200

Sturdy oceangoing vessel of the frigate type equipped for minelaying and adapted as gunnery and training ship. Fitted with directors similar to those in the "Riga" class frigates.



No. 551

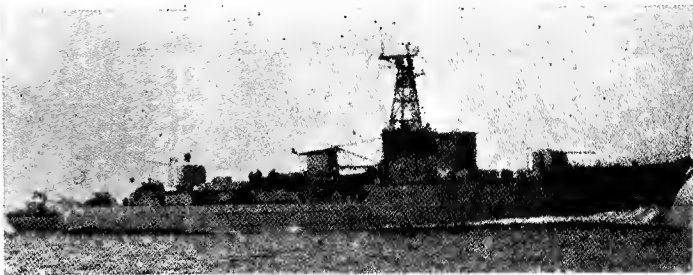
FLEET MINESWEEPERS

30 "T 58" Class

T 514	
Displacement, tons	600 standard; 700 full load
Dimensions, feet	220 × 29.5 × 9
Guns	4—45 mm AA
Main engines	Diesels; 2 shafts; speed = 18 knots

A new class of fleet minesweepers built from 1959 onwards. It is reported that the "T 58" and "T 43" classes together numbered 210 ships.

CONVERSION. Three of this class were converted to submarine rescue ships with armament and sweep gear removed.



T 58 Class Added 1964

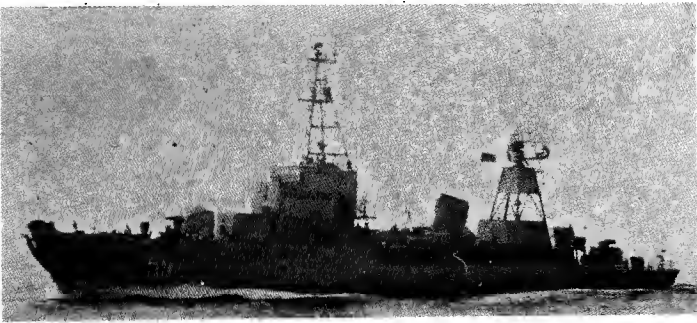
140 "T 43" Class

T 43	T 57	T 74	T 92	T 115	T 306	T 512	T 692
T 54	T 60	T 76	T 95	T 129	T 333	T 533	T 801
T 55	T 65	T 80	T 96	T 157	T 358	T 565	T 802
T 56	T 66	T 91				T 648	T 864

Displacement, tons	500 standard; 600 full load
Dimensions, feet	200 × 27.5 × 9
Guns	4—37 mm AA; 8—13 mm AA MG
Main engines	Diesels; 2 shafts; speed = 17 knots

A handy type of moderately fast fleet minesweepers built in 1948-57 in shipyards throughout the Soviet Union. Of 175 ships ten were transferred to Poland, eight to Albania, six to Egypt, four to Indonesia, three to Bulgaria, and two to Syria.

CONVERSION. Some of this class were converted into radar pickets (see photograph below).



"T 43" Class No. 55 as Radar Picket 1965, col Breyer



358 1963

MINELAYERS

The Soviet Navy is capable of a considerable mine-laying effort. Apart from specialised minelayers, most cruisers and destroyers, some submarines and other craft were fitted for minelaying which has always been a highly specialised branch of the Soviet Navy.

DISPOSALS

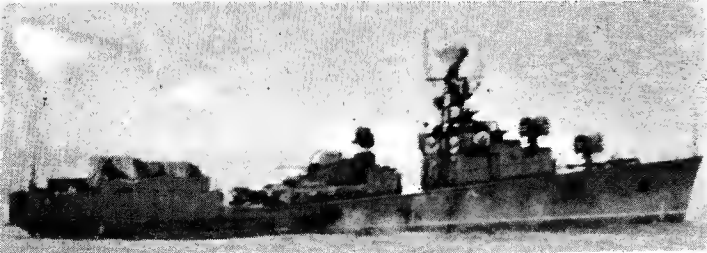
The old minelayers *Voroshilovsk*, *Murman*, latterly used as a survey ship, *Elizabeta* (ex-*Marty*, ex-*Shtandart*), former Imperial Yacht, and the former Japanese *Kamishima* were deleted from the list in 1963, as they are no longer operational. *Ural* (ex-*Felix Dzerzhinski*) is reported to have been returned to the Merchant Navy. The mining tenders MU 41, 42, 43, 44, 45, 46, 48, 50, 51, 52, 53 and 54 were also deleted. See photographs and particulars in the 1962-63 and earlier editions.

COASTAL ESCORTS

"Poti" Class

Displacement, tons	350 standard
Dimensions, feet	200 × 28 × 10
Guns	2—57 mm AA (1 twin mounting)
Tubes	4 anti-submarine
A/S weapons	2—12 barrelled rocket launchers
Main engines	Gas turbines; speed = 28 to 30 knots

This new class of coastal escort vessels or petrol vessels of the submarine chaser type is reported to be basically similar in characteristics to the "Petya" class. The prototype ship is reported to have been built in 1961.

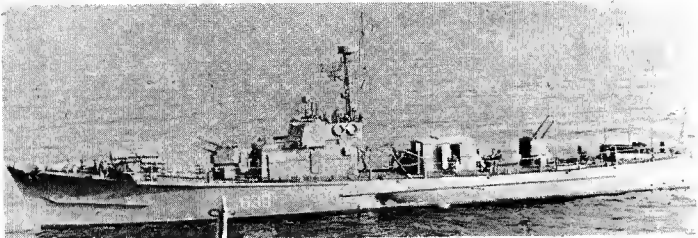


"Poti" Class 1966, col Breyer

100 "S.O.I" Class

No. 639	
Displacement, tons	215 light; 250 normal
Dimensions, feet	138 pp; 147 oa × 20 × 10 max
Guns	4—25 mm (2 twin mountings)
A/S weapons	4 five-barrelled ahead throwing rocket launchers
Main engines	3 diesels; 3 500 bhp = 28 knots
Complement	30

Built from 1957 to 1960. Apparently the design is an enlarged version of the ex-US "110-foot" class of SCs built during the Second World War. Steel hulled.



"SO I" Class No. 639 1965, col Breyer



"SO I" Class 1964

150 "Kronstadt" Class

No. 265	No. 357	No. 361	No. 541
No. 356	No. 360	No. 497	and others
Displacement, tons	300 standard; 350 full load		
Dimensions, feet	167.3 × 19.3 × 9		
Guns	1—3.9 in; 2—37 mm AA; 3—20 mm AA		
A/S weapons	Depth charge projectors		
Main engines	Diesels; 2 shafts = 23 knots		
Complement	40		

Built in 1948-56. Flush-decked, large squat funnel, slightly raked, massive block bridge structure. An improved version of the now discarded "Arillerist" class. There appear to be two types of this numerically large class of coastal escort vessels. The latest type has a more effective anti-submarine armament. The earlier type carries mines.



"Kronstadt" Class No. 497

COASTAL MINESWEEPERS

20 "Vanya" Class

Displacement, tons	250 standard
Dimensions, feet	144.4 × 20 × 6.9
Guns	2—25 mm (1 twin) AA
Main engines	2 diesels; speed = 15 knots

A new class with wooden hulls basically similar to the "Yurka" class.

10 "Yurka" Class

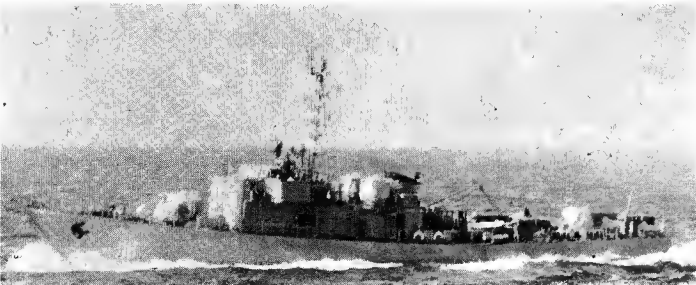
Displacement, tons	300 standard
Dimensions, feet	153 × 27 × 8
Guns	4—25 mm (2 twin) AA
Main engines	2 diesels; speed = 15 knots

Basically similar to NATO coastal minesweepers but constructed of steel.

50 "Sasha" Class

No. 118	No. 143
Displacement, tons	180 standard; 250 full load
Dimensions, feet	147 × 20 × 7
Guns	1—85 mm dp; 4—25 mm AA (2 twin)
Main engines	Diesels; speed = 18 knots

Basically similar to NATO inshore minesweepers, but of steel construction. This series did not run into the number at first anticipated, construction having been discontinued in favour of later types.



"Sasha" Class No. 118

1965, col Breyer

80 "T 301" Class

T 371 Series	T 460 Series
Displacement, tons	130 standard; 180 full load
Dimensions, feet	100 × 16 × 4.5
Guns	2—37 mm AA; 2—25 mm AA
Main engines	Diesel, 2 shafts; 480 bhp = 10 knots

Built from 1946 to 1956. Nos. T 341, 356, 376, 442, 459, 460 and others. Several were converted to survey craft, and many adapted for other purposes or used for port duty and auxiliary service. There are two different types, the "T 371" group, and the "T 460" group with raking funnel cap (see top photograph).

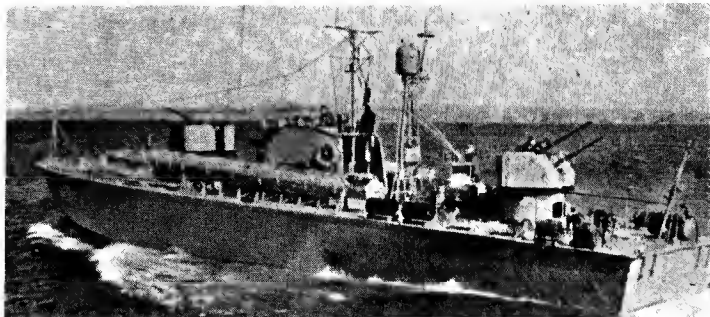


No. 223. "T460" Series

1962



T 371 Series



"P 6" Class (see col 2)

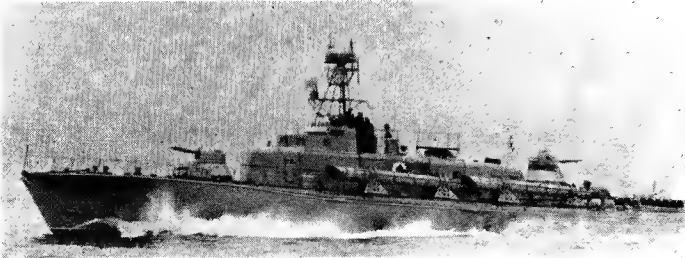
1966, Col Breyer

MOTOR TORPEDO BOATS

"Shershen" Class

Displacement, tons	150
Dimensions, feet	131.5 × 23 × 6.5
Guns	4—25 mm AA (2 twin)
Tubes	4—21 in (single)
Main engines	Gas turbines; speed = 40 knots

These large torpedo boats have the same basic hull and layout as the "Ose" class missile patrol boats, but with tubes on the launcher sites and gas turbines instead of diesel propulsion.



"Shershen" Class

1966, col Breyer

"P 12" ("PA 6") Class

Displacement, tons	73
Dimensions, feet	82 × 20 × 5.5
Guns	4—25 mm AA (2 twin)
Tubes	2—21 in
Main engines	5 000 hp = 42 knots

A new class fitted with hydrofoils. Launched in 1961. Armament varies.

"P 10" ("PA 5") Class

Displacement, tons	60
Dimensions, feet	85.5 × 20 × 6
Guns	4—25 mm AA (two twin)
Tubes	2—21 in
Main engines	Gas turbines; speed = 47 knots

Built since 1961. Can carry 4—21 inch tubes and 2—25 mm AA guns alternatively.

"P 8" ("PA 4") Class

Displacement, tons	55
Dimensions, feet	85.5 × 20 × 6
Guns	4—25 mm AA
Main engines	Diesel engines; 2 000 bhp = 42 knots

A numerically large class boats with aluminium hulls. Launched from 1951 to 1958.



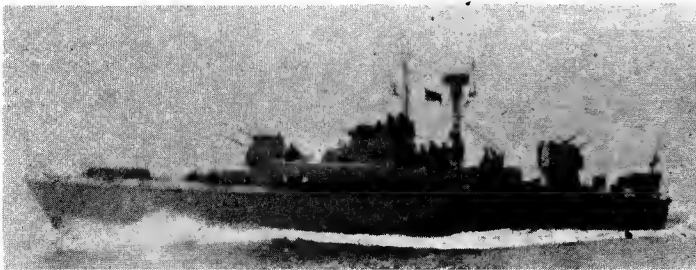
No. 312

1966, col Borg

"P 6" ("PA 3") Class

Displacement, tons	50
Dimensions, feet	82 × 16.8 × 5.5
Guns	4—25 mm AA
Tubes	2—21 in
Main engines	Speed = 40 knots

Medium type. Launched during 1956-58. All capable of conversion into gunboats



No. 814

1965, col Breyer

"P 4" ("PA 2") Class

Displacement, tons	45
Dimensions, feet	82 × 16.8 × 5.5
Guns	2—25 mm AA
Main engines	Speed = 40 knots

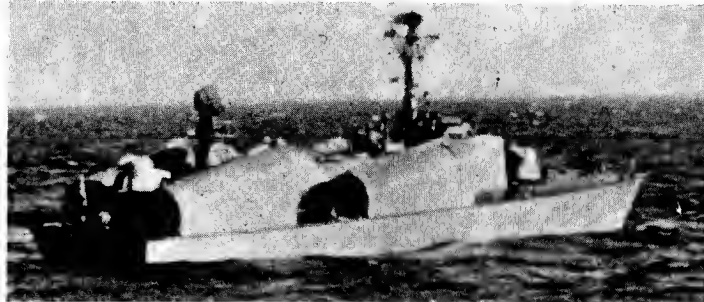
Intermediate type. Launched during 1952-58. Have been interchanged as gunboats. The smaller boats of the "P8" and "P2" classes were deleted in 1966.

MISSILE PATROL BOATS

50 "Osa" Class

TAMBOVSKYI KOMSOMOL		No. 85	No. 183	No. 551	No. 745
Displacement, tons	160 standard; 200 full load				
Dimensions, feet	131.5 oa x 23 x 6.5				
Guided weapons	4 large hood type missile launchers in two pairs abreast				
Guns	4—25 mm; (2 twin, 1 forward, 1 aft)				
Main engines	3 diesels; 4 800 bhp = 35 knots				

These later boats, built in 1961-62 have a larger hull and four launchers in two pairs as compared with one pair in the MTB conversions. They are reported to have a surface-to-surface missile range of about 15 to 18 miles.

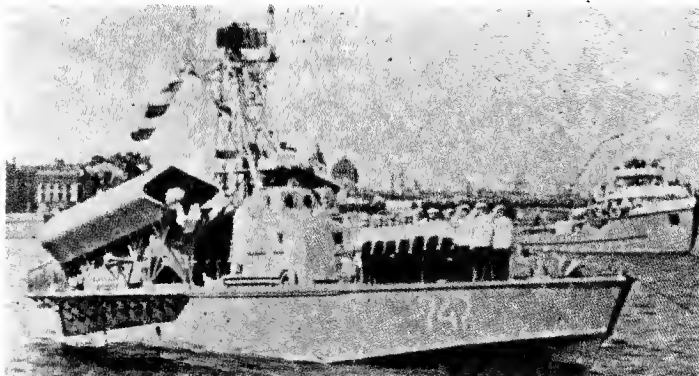


"Osa" II Class 1967, col Breyer

50 "Komar" Class

No. 747	
Displacement, tons	75 standard; 100 full load
Dimensions, feet	88 oa x 21 x 6
Guided weapons	2 launchers for missiles of 15 miles range
Guns	2—25 mm AA (1 twin forward)
Main engines	3 diesels; 4 800 bhp = 40 knots

A new type of boats converted from "P 6" class motor torpedo boats. Fitted with two surface-to-surface launchers aft in a hooded casing approximately 45 degrees to the deck line. Built in 1960-61.



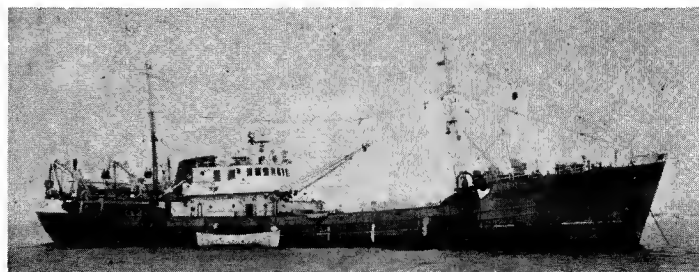
"Komar" Class No. 747 1965, col Breyer

DIRECTION TRAWLERS

AMPERMETR AMTR BAROGRAPH BAROMETR DEFLEKTOR	GIDROFON GIROSKOP INCUCALNS IZMIRITEL IZVALTA	KRENOMETR LINZA LOTLIN LOTZMAN MUKSUN	OLOICHAN OLONEC OSTROV REDUCTOR PROTRACTOR	SOKOL TALIKU USMA VERTIKAL ZELUPE ZOND
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Meesurement, tons	684 gross; 226 net (<i>Maksun, Sokol</i>); 502 gross; 197 net (<i>Oloichan, Ostrov, SRTM 8422</i>); 334 gross; 89 net (<i>Isvalta, Usma, Zelupe</i>); 293 gross; 88 net (<i>Incukalno, Taliku, SRT 209, SRT 222, GS 34, 36, 43, 46, 47, 55</i>)
Dimensions, feet	Length 165 (ships vary)

Reported to be fitted with electronic interception equipment, with a layout designed for intelligence collection. A considerable number of observation trawlers, equipped with radio aerials and direction-finding apparatus have been sighted by British and American warships during international combined sea and air exercises.



MUKSUN 1965, courtesy, Mr Michael D. J. Lennon

LANDING SHIPS

"Alligator" Type

Displacement, tons	4 000 standard
Dimensions, feet	328 x 50 x 14 max
Guns	2—57 mm AA
Main engines	Speed = 15 knots

Newest type of Soviet landing ship and the largest built in the USSR to date. First ship built in 1965-66 and commissioned in 1966. These ships have ramps on the bow and stern. Carrying capacity near 2 400 tons. "Alligator" is the NATO code name for this LST type.

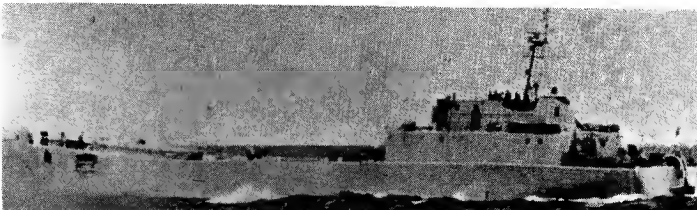


"Alligator" type 1967, col Breyer

"Polnocny" Type

Displacement, tons	900 to 1 000
Dimensions, feet	246 x 39.3 x 9.8
Armament	Rocket projector
Main engines	Diesels; 4 000 bhp = 15 knots

A new type of amphibious vessel basically similar to the US medium landing ship, rocket (LSMR) type. Can carry 8 to 10 tanks.



"Polnocny" Type 1966

"MP 8" Type

Displacement, tons	1 200
Dimensions, feet	236.2 x 36 x 13
Guns	4—57 mm (2 twin)
Main engines	Diesels; speed = 15 knots

A new type of landing ship with a short and low quarter deck abaft the after castle and a waist between the gun mounting before the bridge and the gun mounting on the high forecastle. Can carry 8 to 10 tanks.

"Bira" (MP 6) Type

Displacement, tons	1 800
Dimensions, feet	246 x 40 x 10.5
Guns	4—47 mm (1 quadruple)
Main engines	Diesels; speed = 10 knots

Former freighters of the "Bira" class. Two masts, one stepped from the superstructure aft and one in the forecastle. King ports in the bandstand on the forecastle has two pairs of barrels in the vertical plane. Can carry 8 to 10 tanks.

LANDING CRAFT

"MP 10" Type

Displacement, tons	420
Dimensions, feet	157.5 x 19.7 x 6.5
Main engines	Diesels; speed = 10 knots

A new type of landing craft basically similar to the British LCT (4) type in silhouette and layout. Can carry 4 tanks.

"Kumos" (MP 4) Type

Displacement, tons	800
Dimensions, feet	180.5 x 23 x 9
Guns	4—25 mm (2 twin)

Of the small freighter type in appearance. Two masts, one abaft the bridge and one in the waist. Gun mountings on poop and forecastle. Can carry 6 to 8 tanks.

"MP 2" Type

Displacement, tons	700
Dimensions, feet	197 x 29.5 x 8.2
Guns	4—25 mm (2 twin)
Main engines	Diesels; 1 200 bhp = 16 knots

Basically similar to the British LCT (8) type. Gun mountings on after shelter deck abaft funnel and on forecastle. Can carry 6 to 8 tanks.

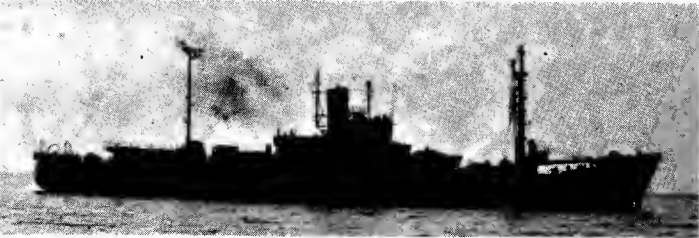
For particulars of remaining Soviet LCT (300 tons) and LC (150 tons) types see 1966-67 edition.

DEPOT SHIPS

9 "Atrek" Class

AMBURAN	ARARAT	ATREK	AYAT	BAKHMUT
Displacement, tons	3 500 standard; 6 700 full load			
Measurement, tons	3 258 gross			
Dimensions, feet	336 × 49 × 20			
Main engines	Expansion and exhaust turbines; 1 shaft; 2 450 hp = 13 knots			
Boilers	2 water tube			
Radius, miles	3 500 at 13 knots			

Built in 1956-58, and converted to naval use from "Kolomna" class freighters. There are nine of these vessels employed as submarine tenders and replenishment ships. *Atrek*, fitted with radar homing beacons, is reported to be comprehensively equipped for serving nuclear powered submarines and ballistic missile submarines.

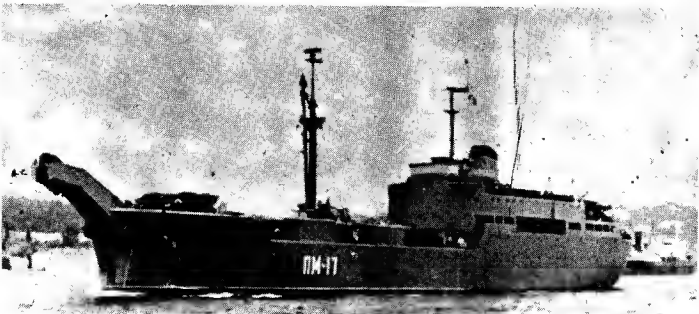


ATREK, V(B)-272 1959, Sergei Romanov

3 "Dnieper" Class

PM 17	
Displacement, tons	3 000 standard; 4 220 full load
Dimensions, feet	325 × 45 × 14
Main engines	Diesels; speed = 12 knots

Bow lift repair and depot ships for fleet support and maintenance. Built in 1957-64 as tenders and multi-purpose ships, equipped with workshops and servicing facilities.



PM 17 Added 1965, courtesy Al Navale

11 "Neva" Class

Displacement, tons	2 500
Dimensions, feet	300 × 42 × 14
Main engines	Speed = 10 to 12 knots

Specialised repair ships equipped with modern machine tools. Built in 1957-58.

PAYSHERD (ex-Otto Wünche)

Displacement, tons	4 730
Dimensions, feet	433 × 52.5 × 14.5
Guns	4—4.1 in; 2—37 mm; 12—20 mm
Main engines	4 MAN diesels; 2 shafts; 12 400 bhp = 20 knots

Ex-German. *Paysherd* was built by Howaldt, Kiel. Launched in 1941.

KUBAN (ex-Waldemar Kophamel)

Displacement, tons	4 726
Dimensions, feet	446 × 52.5 × 14.5
Guns	2—4.1 in; 2—37 mm AA
Main engines	4 MAN diesels; 2 shafts; 12 400 bhp = 20 knots

Ex-German. Launched in 1939. Submarine tender. Salvaged in 1950-51 after being sunk in shallow water by bombing in WW II. Repaired in 1951-1957.

Ex-ADOLF LÜDERITZ

Displacement, tons	2 900 standard; 3 615 full load
Dimensions, feet	374 × 47.5 × 14
Guns	4—4.1 in; 2—37 mm; 12—20 mm
Main engines	4 MAN diesels; 2 shafts; 12 400 bhp = 20 knots

Launched in 1939. Ex-German. Parent ship for motor torpedo boats in the Baltic. A photograph appears in the 1947-48 to 1965-66 editions.

Ex-TEREK (ex-Elbe)

Displacement, tons	820 standard; 1 600 full load
Dimensions, feet	157.5 × 28 × 11
Guns	1—3.5 in; 1—20 mm AA
Main engines	2 Linke-Hofmann-Busch diesels; 2 shafts; 1 600 bhp = 15 knots
Complement	48

Launched in 1931. Ex-German fishery protection vessel. Supply ship for "Z" class submarines. A photograph appears in the 1946-47 to 1963-64 editions.

8 "Tovda" Class

INZA (ex-Novoshaktinsk)	KS 3	V(B) 360 (ex-Zangezur)
KALAR V(B) 87	TOVDA	VYJEGRA V(B) 131
KS 2	SMOLENSK V(B) 415	
Displacement, tons	3 000 standard; 4 000 full load	
Dimensions, feet	282 × 39 × 16	
Guns	6—45 mm AA (3 twin mountings)	
Main engines	2 diesels; 7 000 bhp = 16 knots	
Radius, miles	7 000 at 16 knots	

Polish built ex-tankers converted in 1958 to 1960. Depot and repair ships. Also known as the "Soldek" class, but the NATO designation is "Tovda" class.



SMOLENSK, V(B) 415 1959

2 "Desna" Class

CHAZHMA	CHUMIKAN
Displacement, tons	5 300
Dimensions, feet	485.6 × 57 × 20.3
Aircraft	1 helicopter
Main engines	Triple expansion; 4 000 ihp = 18 knots

Soviet Missile Range Instrumentation Ships (SMRIS). The "Desna" class have a larger hull than the "Sibir" class and are better equipped. Active since 1963.

4 "Sibir" Class

CHUKOTKA	SAKHALIN	SIBIR	SUCHAN
Displacement, tons	4 000 standard; 5 000 full load		
Measurement, tons	3 767 gross (<i>Chukotka</i> 3 800, <i>Suchan</i> 3 710)		
Dimensions, feet	475.7 to 493.5 × 56.1 × 20 (ships vary)		
Guns	6—45 mm AA; 2 MG		
Main engines	Triple expansion; 2 shafts; 3 300 ihp = 15 knots		
Radius, miles	3 300 miles at 12 knots		

Converted bulk ore carriers employed as Missile Range Ships in the Pacific. *Sakhalin* and *Sibir* have three bubble-like domes forward and aft, and carry helicopters. *Suchan* is also equipped with a helicopter flight deck. Launched in 1957-59. All active since 1959.

IRTYSH (ex-Kronstadt)

Displacement, tons	5 880
Dimensions, feet	328 × 46 × 19.5
Guns	4—3 in; 3—45 mm AA; 2 MG
Main engines	Triple expansion; 1 shaft; 1 500 ihp = 12 knots
Coal, tons	430
Radius, miles	1 500 at 12 knots
Complement	240

Parent ship and general supply ship for submarines in the Baltic. Launched in 1931.

SARATOV

Submarine tender and depot ship of the "Anadyr" class

ANGARA (ex-Hela)

Displacement, tons	2 115 standard; 2 500 full load
Dimensions, feet	323 × 42.5 × 11
Guns	2—4.1 in; 1—37 mm AA; 2—20 mm AA
Main engines	4 MAN diesels; 2 shafts; 6 300 bhp = 18 knots
Radius, miles	2 000 at 15 knots

Former yacht built by Stülcken, Hamburg. Launched in 1939. In the Black Sea. A photograph of *Angara* appears in the 1947-48 to 1965-66 editions.

VOLGA (ex-Juan Sebastian De Elcano)

Displacement, tons	9 300
Dimensions, feet	459 × 56 × 22
Guns	2—3 in; 3—45 mm AA; 5 MG
Main engines	Parsons turbines; 2 shafts; 5 500 shp = 15 knots
Oil fuel, tons	1 090
Complement	260

Built by Echevarrieta and Larrinaga, Cadiz, in 1928. In the Black Sea. The Soviet name as a merchant ship if not known, but she was probably immediately incorporated in the Soviet Navy. Combined transport and training ship.

Ex-DONETZ (ex-Weichsel, ex-Syra)

Displacement, tons	3 974
Dimensions, feet	309.2 × 44 × 13.5
Guns	4—20 mm AA
Main engines	Triple expansion; 1 400 ihp = 10.5 knots
Boilers	2 watertube
Coal, tons	425
Complement	135

Depot ship for submarines. Built by Howaldt, Kiel. Launched in 1923. In the Baltic. A photograph of *Donetz* appears in the 1947-48 to 1963-64 editions.

There are also the old repair ships **KOMMUNA** (ex-Volkhov) and **ELBRUS**, see full particulars on page 450 of the 1966-67 edition.

SUPPLY SHIPS

4 "Uda" Type

DONETS

Displacement, tons circa 3 500
 Dimensions, feet 344.5 × 47.2 × 13.1
 Guns 6—25 mm AA (3 twin, 1 forward, 2 aft)
 Main engines Diesels; 2 shafts; speed = 13 knots

A new type of Soviet supply ships. Built in 1964-65. Ships vary.



"Uda" Type

1966, col Breyer

SALVAGE VESSELS

3 "Prut" Class

MB 21**MB 22****MB 23**

Displacement, tons 2 000 standard; 3 500 full load
 Dimensions, feet 344.5
 Guns 4—57 mm (quadruple) forward
 Main engines Speed = 18 knots

Large rescue vessels with raked down flush deck and mainmast derrick. Built in 1960.



MB 23

Added 1965, courtesy Al Navale

3 Submarine Rescue Type

GIDROLOG**VALDAY**

Three "T 58" class fleet minesweepers hull were completed as submarine rescue ships at Leningrad in 1961. *Gidrolog* is G 111.

4 "Pamir" Class

AGATAN**ALDAN****ARBAN****PAMIR**

Measurement, tons 1 443 to 2 032 gross
 Dimensions, feet 256 oa × 42 × 13.5
 Main engines Two 10 cyl 4 str diesels; 2 shafts; 4 200 bhp = 17 knots

Salvage tugs built at AB Gävie, Varv, Sweden, in 1959-60. Equipped with strong derricks, powerful pumps, air compressors, diving gear, fire fighting apparatus and electric generators.

MB 24**MB 25****MB 26**

Displacement, tons 835
 Dimensions, feet 134.5 wl; 143 oa × 34 × 15
 Guns 1—3 in dp; 2—20 mm AA
 Main engines 2 BM diesels; 2 electric motors. 2 shafts; 1 875 bhp = 14 knots
 Oil fuel, tons 187
 Complement 34

Salvage and rescue tugs. Built by Levingstone Shipbuilding Co, Orange, Texas. Launched in 1944. Ex-United States ATAs (Ocean Rescue Tugs). In the Baltic.



MB 24

Photo A. Kull

SIGNAL

Displacement, tons 680
 Dimensions, feet Speed = 14 knots

Launched in 1936. Fitted with powerful pump and other apparatus for salvage. In the Baltic. Other numbers reported are A 2, 480, 481, 490, 495, 515, 525, 580, 610, 612, 621 and 663. Salvage vessels are designated MSB.

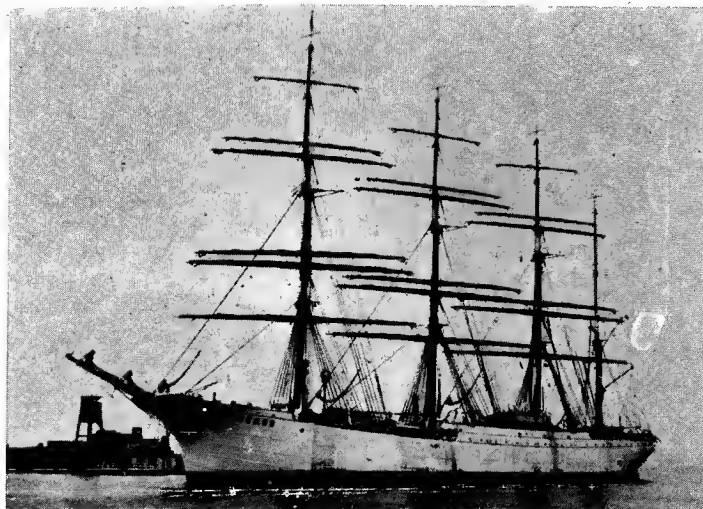
TRAINING SHIPS

2 "Sedov" Type

KRUZENSTERN**SEDOV**

Measurement, tons 3 064 gross

Barques. Built in 1921. Employed as sail training ships for midshipmen, cadets and junior seamen.



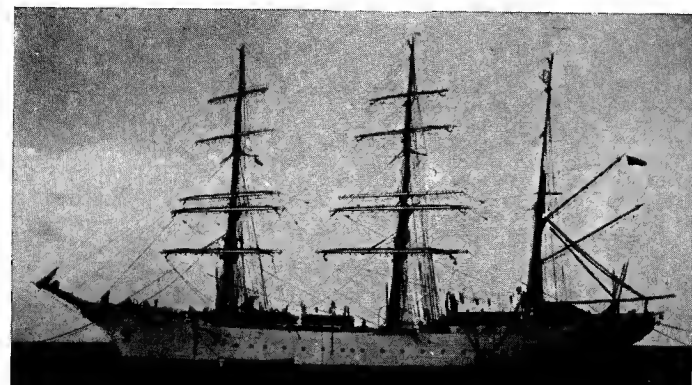
SEDOV

1964, courtesy Mr Michael D. J. Lennon

TOVARISCH (ex-Gorch Foch)

Displacement, tons 1 350
 Dimensions, feet 242.8 × 39.3 × 15
 Guns, 2—20 mm AA
 Main engines MAN diesel; 1 shaft; 520 bhp = 8 knots
 Oil fuel, tons 25
 Radius, miles 3 500 at 8 knots
 Complement 260

Barque. Ex-German training ship. Built by Blohm & Voss, Hamburg. Launched in 1933. Sail area: 2 150 sq yds.



TOVARISCH

1958, R. M. Scott

ENISEJ**PRAKTIKA (ex-Possat)****TOBOL****UCHEBA (ex-Mousson)**

Displacement, tons 300

Three masts. In the Baltic. Sailing vessels for training cadets, boys and volunteers. There are about ten three-masted schooners of 300 tons with one square sail on the foremast of the same class as the *Pratika* and *Ucheba*, built in Finland. They are described as very nice little ships.

NYEMAN (ex-Iser, ex-Puma)

Displacement, tons 3 850
 Dimensions, feet 319 × 45.5 × 13
 Guns 4—37 mm
 Main engines Triple expansion; 2 shafts; 2 000 ihp = 12 knots

Built by Bremen-Vulcan. Launched in 1930. Converted merchant vessel. Former Submarine Depot Ship. Now a training ship in the Baltic. *Nyemen* is the name of a river in Western Russia.

Ex-CRISTOFORO COLOMBO, Ex-Z 18

Displacement, tons 2 787
 Dimensions, feet 218 pp; 257 oa × 48.5 × 20.3
 Sail area 18 700 sq ft
 Main engines 2 Tosi diesels with electric drive to 2 Marelli motors. 2 shafts; 1 600 hp = 10 knots
 Oil fuel, tons 103
 Radius, miles 6 000 at 8 knots
 Complement 280

Built at Castellammare. Launched on 4 Apr 1928. Assigned to the Soviet Navy by the Italian Peace Treaty. Delivered to the USSR in Feb 1949.

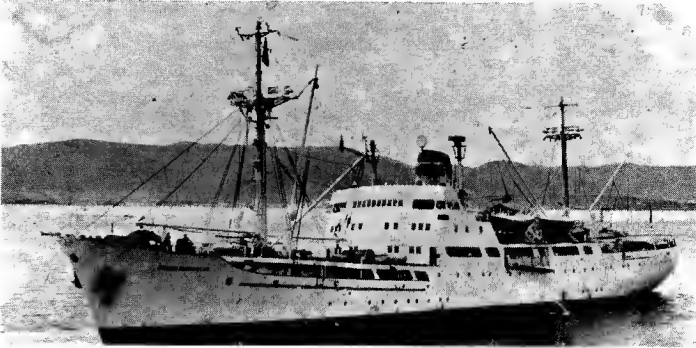
The old training ship *Aurora* was deleted in 1963 as although she still exists as a prestige tourist relic (famous to the USSR as the cruiser from which the first round of the October Revolution was fired) she is no longer of military value.

SURVEY SHIPS

MICHAIL LOMONOSOV

Displacement, tons 5 960
Measurement, tons 3 897 gross; 1 195 net
Main engines Speed = 13 knots

Built by Neptune, Rostock, in 1957. Operated by the Academy of Science. Equipped with 16 laboratories. Carries a helicopter for survey.



MICHAIL LOMONOSOV 1965, courtesy Mr Michael D. J. Lennon

NEREIDA

Oceanographic research ship. Reported to be on operational service in Apr 1965.

VITYAZ

Displacement, tons 5 700
Main engines Speed = 14.5 knots
Range, miles 18 400 at 14 knots
Complement 137 officers and men including 73 scientists

Oceanographic research ship. Equipped with 13 laboratories.

NEVELSKOYE

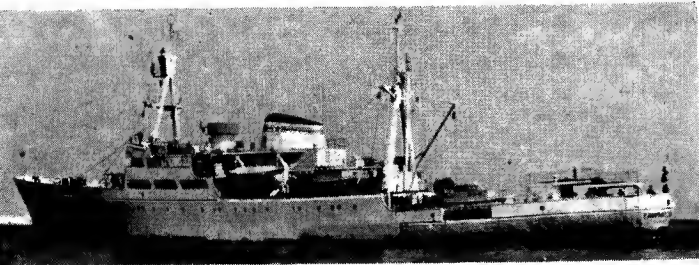
Displacement, tons 275 × 50 × 13

A new naval hydrographic survey ship designed and built in the USSR.

GAVRIL SARITSHEV NIKOLAI ZUBOV POLYUS STVOR

Displacement, tons 2 674 standard; 3 021 full load
Dimensions, feet 295.2 × 42.7 × 15
Main engines 2 diesels; speed = 16.7 knots
Complement 108 to 120, including 70 scientists

Nikolai Zubov, oceanographic research ship, was built at Szczecin Shipyard, Poland in 1964. Visited London in 1965. Employed on survey in the Atlantic. A photograph of Nikolai Zubov appears in the 1965-66 edition (page 459).



GAVRIL SARITSHEV 1966, courtesy Mr Michael D. J. Lennon

AISBERG

OKEANOGRAPH

Trawlers converted for surveying. Visited Glasgow in 1964.

GIDROFON GIDROMTR GIDROSKOP GORIZONT

Displacement, tons 650 standard; 945 full load
Dimensions, feet 180 wl; 184.5 oa × 33 × 10
Main engines Diesels; 2 shafts; 1 440 bhp = 15 knots
Complement 100

Former United States steel-hulled fleet minesweepers of the "Admirable" class converted into surveying ships. Pennant numbers G-140, G-145, G-142 and G-139, respectively. The name *Gidrofon* is reported to have been given to an intelligence trawler, so the vessel named above may have been replaced or renamed.

G 402

G 482

Displacement, tons 550 standard; 750 full load
Dimensions, feet 202 × 28 × 9
Main engines Triple expansion; Exhaust turbine; 2 150 ihp = 16 knots
Boilers 2 Schulz

G 402, G 482 and other ex-German minesweepers are used as survey ships. A photograph of G 482 appears in the 1959-60 to 1965-66 editions.

LEBEDJ

Displacement, tons 1 100
Dimensions, feet 108.5 × 29.5 × 16
Guns 1—37 mm AA; 2—13 mm MG
Main engines Triple expansion; 680 ihp = 12 knots

CHUKCHA

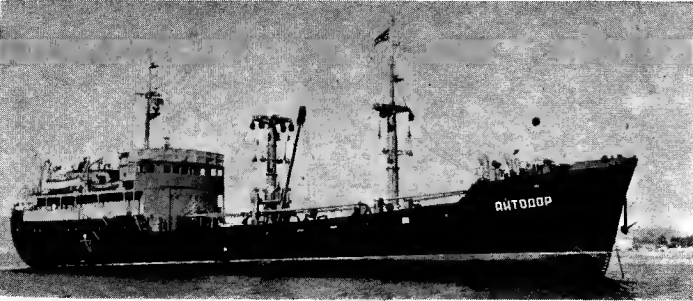
Displacement, tons 2 700 standard; 3 900 full load
Dimensions, feet 246 × 43.5 × 14
Main engines Triple expansion; 900 ihp = 10 knots
Fuel, tons 900 coal

In the White Sea (as is *Lebedj* below). *Ost*, *Vest* and *Zuid* were deleted from the list in 1965. Sister ship *Nord* was lost.

AYTODOR

Measurement, tons 1 217 gross; 448 net

Built at Budapest. Naval survey (ex-merchant) ship of the "Pesht" class.



AYTODOR 1965, courtesy Mr Michael D. J. Lennon

KAMCHADEL

Displacement, tons 1 300
Dimensions, feet 210 × 32.8 × 11
Guns 2—4 in; 2 MG
Main engines Triple expansion; 700 ihp = 9.5 knots
Fuel, tons 400 coal
Complement 80

PARTIZAN

POLYARNYI

Partizan and *Polyarnyi* were both launched in 1937. In the Far East. Pennant Nos. G-121, G-124 and G-075, respectively.

OKEAN

Displacement, tons 1 500 standard; 3 200 full load
Dimensions, feet 265.8 × 42.5 × 18.2
Guns 3—5.1 in; 2—3 in; 2 MG
Main engines Triple expansion; 2 shafts; 2 400 ihp = 14 knots
Complement 160

OKHOTSK

TEODOLIT

Launched in 1937-38. In the Far East. Former minelayers converted into survey ships Nos. G 098 and G 104, respectively. *Murman* of this class is reported extant. A photograph of *Okhotsk* appears in the 1955-56 to 1965-66 editions.

GIDROGRAF (ex-Hydrografs)

Displacement, tons 600
Main engines Speed = 10 knots

Ex-Latvian surveying vessel and tender. Launched in 1918.

ALIDADA
EKHOLOT

GIDROSTAT
LT SHMIDT

OLEG KOSHEVOI
PRIBOI
VARIOMETR

Pennant Nos. G-165, G-199, G-15, G-151, G-169, G-084 and G-160, respectively.

SORAKORAM

VAL

Former Japanese "Keibokan" class converted into survey ships. Nos. G-127 and G-108.

KOMPAS

Displacement, tons 415
Main engines Speed = 7 knots

Ex-Estonian. Surveying vessel and general utility ship. Launched in 1918.

EKVATOR (ex-Meteor)

Displacement, tons 1 200
Dimensions, feet 219.4 × 33.5 × 12.5
Guns 1—3.5 in; 1 MG
Main engines 2 sets 8-cyl 4 stroke Diesels; 2 shafts; 2 200 bhp = 14.5 knots

Built by Kaiserliche Werft, Danzig. Launched on 18 Jan 1915. Name means "Equator". Refitted in East Germany in 1957.

AZIMUT

Displacement, tons 420
Dimensions, feet 144.3 × 28.5 × 11
Main engines Speed = 11 knots

Swedish built. Launched in 1914. Fitted with a reinforced stern for icebreaking.

GALS

Displacement, tons 540
Dimensions, feet 121.2 × 25 × 11
Main engines Triple expansion; 240 ihp = 8 knots
Fuel, tons 45 coal

BAROGRAF

Displacement, tons 260
Dimensions, feet 92 × 19 × 12.5
Main engines Triple expansion; 425 ihp = 7.5 knots
Complement 19

GLOBUS

ZENIT

Both reported to be of the "Samara" class survey ships. *Zenit* means "Zenith".

ALEXSEY CHIRIKOV

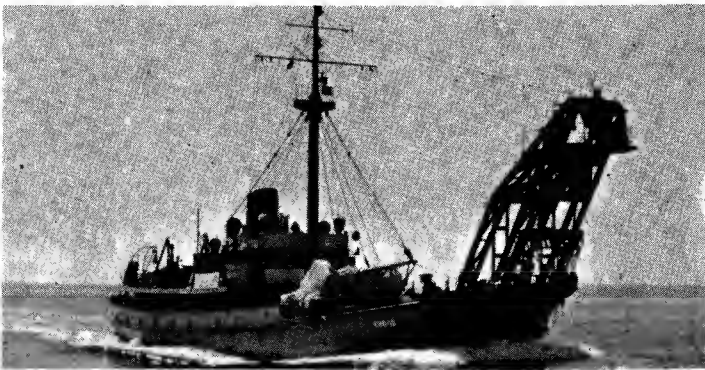
FEDOR LITKE

BOOM DEFENCE VESSELS

18 "Neptune" Type

Displacement, tons 700
Dimensions, feet 170 x 36 x 12.5
Main engines Oil fuel; speed = 12 knots

Boom defence vessels or netlayers built in 1957-60 by Neptun, Rostock.



NO. 13

1959, Antonov Rogov

TRANSPORTS

Ex-HAYASAKI

Displacement, tons 950
Measurement, tons 2 166 gross
Dimensions, feet 190.2 pp; 194.8 wl; 204.3 oa x 31 x 10.2
Guns 1—3.1 in; 2—25 mm; 2—13 mm AA
Main engines 2 diesels; 1 600 bhp = 15 knots

Built at Sakurajama. Launched in 1943. Formerly the first Japanese refrigeration ship. A photograph appears in the 1953-54 to 1964-65 editions.

Ex-No. 13

Displacement, tons 1 800
Dimensions, feet 315 oa x 33.5 x 12
Guns 2—3 in; 26—25 mm AA; 5 MG; 42 DC
Main engines Turbine; 9 500 shp = 22 knots
Boilers 2

Former Japanese. Cargo capacity 500 tons for landing 480 marines.

Ex-No. 137

Displacement, tons 1 129
Dimensions, feet 264 oa x 30 x 10.2
Guns 1—3.9 in; 21—25 mm AA; 12 DC
Main engines Turbine; 2 500 shp = 16 knots

Former Japanese. Cargo capacity, 218 tons, plus 674 tons of fuel. Accommodation for 120 marines.

Ex-MONTECUCCO (ex-KT 32)

Measurement, tons 834 gross
Dimensions, feet 221.8 x 39.3 x 9
Main engines Triple expansion; 2 shafts; 2 200 ihp = 12 knots
Coal, tons 160

Former Italian. Built by Ansaldo. Launched on 19 Dec 1942. Ceded under the Peace Treaty. Delivered to Russia on 23 May, 1949.

P 6 P 11 P 15 P 252 P 268 P 368 P 384
P 7 P 13 P 35 P 264 P 352 P 380

Transports of the above pennant numbers are reported, but no names.

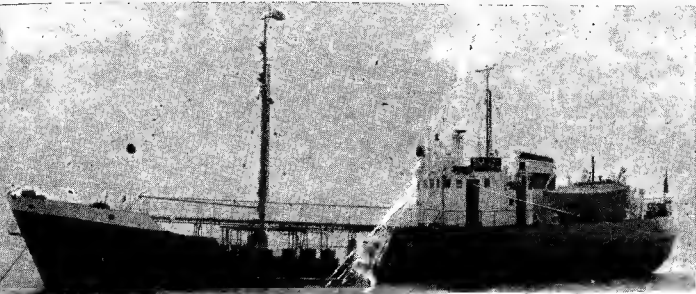
KAMCHATKA MONGOL
"Lake" class. Pennant numbers P-380 and P-242, respectively.

SHIM OLEKMA SHILKA
OB OLGA USSURIJ (ex-Okhotsk)
VISHERA

Nos. P-247 (Ob), P-250 (Olekma), P-274 (Shilka), P-365 (Ussuriy), P-379 (Vishera), Olekma is ex-Japanese "Kisak" class. Olga and Ishim are Coast Guard transports. Ob is 1 194-ton diesel electric Antarctic support ship.

Ex-BASENTO Ex-ISTRIA Ex-LIRI Ex-POLCEVERA

Small water tankers ceded under Italian Peace Treaty. Volodel was discarded. "Voda" class water tanker Vodoleyev also reported.



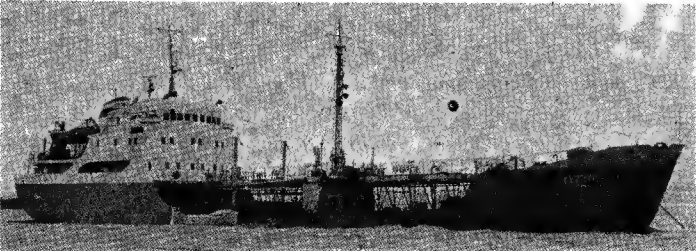
TM 322

1962, courtesy Godfrey H. Walker, Esq

FLEET OILERS

CRYPTON
Measurement, tons 1 769 gross; 559 full load

Naval fuel tanker. Built in 1965. Reported to be in Atlantic Fleet.



CRYPTON

1965, courtesy Mr Michael D. J. Lennon

"Pevek" Class

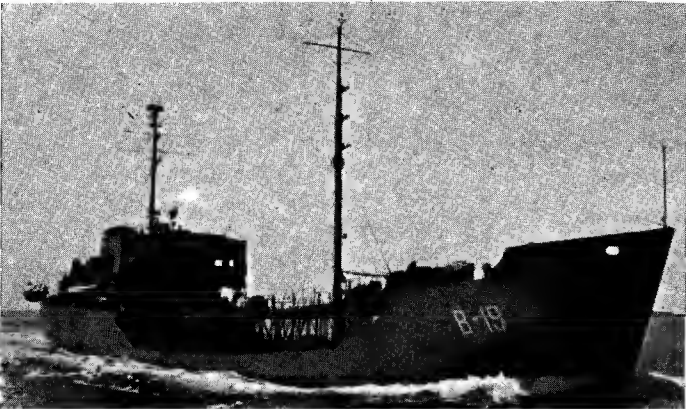
POLYARNIK ZOLOTY ROG
Length, feet: 400
Guns B—45/57 mm (2 quadruple)

A new type similar to US AOG. Polyarnik has pennant No. P-260.

KHOBI NARA ORION SEYMA
Of this class 29 units are reported to have been built from 1957 to 1959.

ALATYR IRBIT JAHROMA KRSNOARMEETS KRSNOFLOTETS ROSSOSH
Pennant Nos.: P393 (Alatyr), P-256 (Irbity), P-260 (Polyarnik), P-384 (Rossash) and P-335 (Krasnoflotets). The latter is a Coast Guard tanker.

KONDA VOLKHOV
Volkhov of "Leningrad" or "Kazbek" class taken over by the Navy as an oiler.

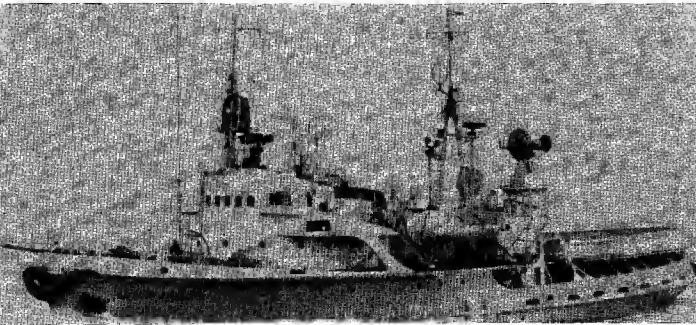


V(B)-19

1959, Sergei Romanov

FLEET TUGS

KAPITAN V. FEDETOV
A large and powerful tug with a comprehensive array of radar and radio aerials.



KAPITAN V. FEDETOV

1963

DUNAJ NAEZDNIK TEREK TETYUHKE ZOLOTOI
Pennant Nos. A 486, A 624, A 515, A 459 and A 612 respectively.
MB V-48 MB V-75 MB V-125 MB V-149 MB V-163
MB V-72 MB V-118 MB V-146 MB V-160

Photograph in the 1959-60 edition. MB 160 is of the "Okhtenskiy" class.

CHF 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Letters painted on bows are initial letters of "Chernomorskii Flot", meaning "Black Sea Fleet". A photograph of CHF 19 appears in the 1959-60 edition.

MOROZ (ex-Soldat). Photograph in the 1959-60 edition. STROGIY ("Orel" class).

2 Projected. Nuclear Powered

ICEBREAKERS

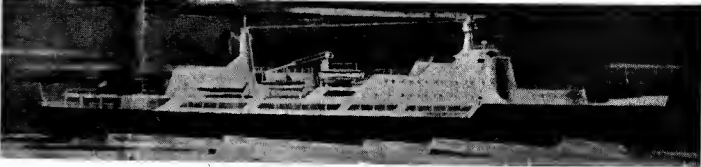
To be built from the same plans as *Lenin* but will have only two reactors, equal to 30 000 shp, and will be lighter by some 1 000 tons.

2 New Construction. Nuclear Powered

ARKTIKA

- Displacement, tons 25 000
- Dimensions, feet 525 x 82 x 29
- Main engines Nuclear reactors and steam turbines = 25 knots

The largest icebreakers ever designed. Under construction. Reported to be designed to operate up to ten helicopters.



ARKTIKA (Sketch)

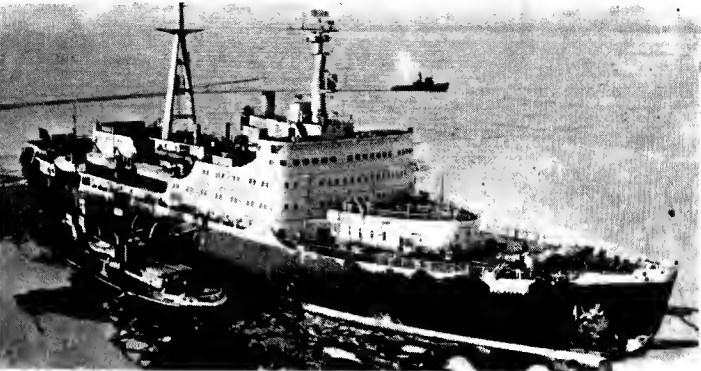
1967

1 Large Nuclear Powered Type

LENIN

- Displacement, tons 16 000
- Dimensions, feet 440 x 90.5 x 25
- Aircraft 2 helicopters
- Main engines 3 pressurised water-cooled nuclear reactors, 4 steam turbines; 3 shafts (no shaft in bow); 44 000 shp = 18 knots max

The world's first nuclear powered surface ship to put to sea. Built at the Kirov Elektrosia Works, Leningrad. Launched on 5 Dec 1957. Completed and commissioned on 15 Sep 1959. Reported to have accommodation for 1 000 personnel. The nuclear reactors enable her to steam for 18 months without refuelling. Fuel consumption is reported to be only five ounces daily. The turbines were manufactured by the Kirov plant in Leningrad. Three propellers aft, but no forward screw. With her reinforced prow she is able to force a 100 ft wide ice-free swathe and move continually through solid pack ice 8 feet thick at 3 to 4 knots.



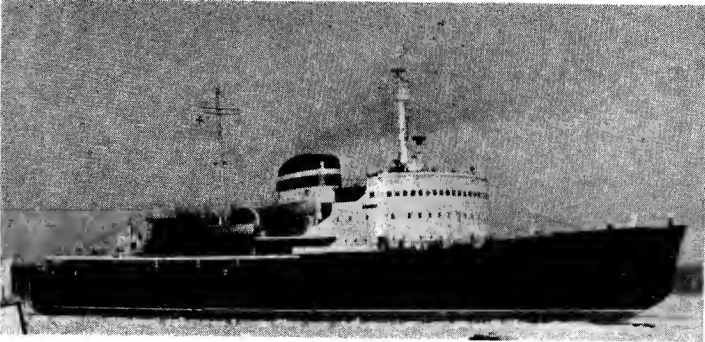
LENIN

Added 1966

KIEV	LENINGRAD	MOSKVA	MURMANSK
Displacement, tons	12 840 standard; 15 360 full load		
Dimensions, feet	368.8 wl; 400.7 oa x 80.3 x 31 (normal); 34.5 max		
Aircraft	2 helicopters		
Main engines	8 Sulzer diesel-electric; 3 shafts; 22 000 shp = 18 knots		
Oil fuel, tons	3 000		
Radius, miles	20 000		
Complement	145		

Largest diesel-electric icebreakers in the world. Designed to stay at sea for a year without returning to base. Built by Wärtsilä-Koncernen A/B Sandvikens Skeppsdocka, Helsinki. The concave embrasure in the ship's stern is a housing for the bow of a following vessel when additional power is required. There is a landing deck for helicopters and hanger space for two machines. *Moskva* was launched on 10 Jan 1959 and completed in June 1960. *Leningrad* was laid down in Jan 1959, launched on 24 Oct 1959, and completed in 1962. *Kiev* was completed in 1966. *Murmansk* was launched on 14 July 1967.

Eight generating units of 3 250 bhp each comprising eight main diesels of the Wärtsilä-Sulzer 9 MH 51 type which together have an output of 26 000 electric hp. Four separate machinery compartments. Two engine rooms, four propulsion units in each. Three propellers aft. No forward propeller. Centre propeller driven by electric motors of 11 000 hp and each of the side propellers by motors of 5 500 hp. Two Wärtsilä-Babcock & Wilcox boilers for heating and donkey work. *Moskva* has four pumps which can move 480 metric tons of water from one side to the other in two minutes to rock the icebreaker and wrench her free of thick ice.



MOSKVA

1960, Wärtsilä-Koncernen A/B Sandvikens Skeppsdocka

Name	Measurement	Launched	Completed
KAPITAN BELOUSOV	5 360 tons gross	1954	1955
KAPITAN MELECHOV	4 000 tons gross	19 Oct 1956	1957
KAPITAN VORONIN	3 416 tons gross	1955	1956

- Displacement, tons 4 375 to 4 415 standard; 5 350 full load
- Dimensions, feet 265 wl; 273 oa x 63.7 x 23
- Main engines Diesel-electric; 6 Polar 8 cyl; 10 500 bhp = 14.9 knots
- Oil fuel, tons 740

Kapitan Belousov was laid down at the end of 1952 and completed in Sep 1954. All built by Wärtsilä-Koncernen A/B, Sandvikens Skeppsdocka, Helsinki. The ships have four screws, two forward under the forefoot and two aft.



KAPITAN BELOUSOV

1966

POLLUKS (ex-Pollux)

- Displacement, tons 4 500
- Dimensions, feet 262.5 x 63 x 23
- Main engines Triple expansion; 6 000 ihp = 13 knots
- Boilers 4

Built in the Netherlands by Smit, Rotterdam, in 1943. *Pollux* was German name.

ALIOSHA POPOVICH (ex-German Eisvogel)

- Displacement, tons 2 090
- Dimensions, feet 200 x 49.2 x 21.7
- Main engines 2 Triple expansion; 3 200 ihp = 13.5 knots
- Boilers 1

Former German icebreaker. Built by Aalborgs. Launched in 1941. In the White Sea.

ILIYA MUROMETS (ex-German Eisbar)

- Displacement, tons 1 918
- Dimensions, feet 180.5 x 49.5 x 21.7
- Main engines Triple expansion; 1 600 ihp = 15 knots
- Boilers 1

Former German icebreaker. Built by Eriksberg, Gothenburg. Launched in 1941.

PERESVET (ex-Castor)

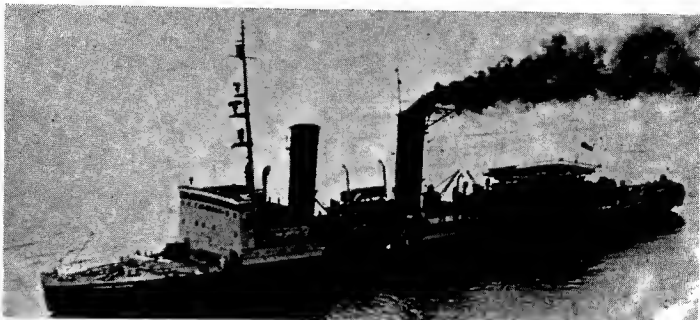
- Displacement, tons 5 150
- Dimensions, feet 295.2 x 69 x 22
- Main engines Triple expansion; 3 shafts; 9 600 ihp = 15 knots
- Boilers 4 Wagner

Former German icebreaker. Built by Schichau, Danzig. Launched in 1939. A photograph of *Peresvet* appears in the 1959-60 to 1966-67 editions.

Name	Builders	Launched	Completed
ADMIRAL LAZAREV (ex-Yosif Stalin)	Baltic Works, Leningrad	14 Aug 1937	1939
LAZAR KAGANOVICH	Baltic Works, Leningrad	30 Apr 1937	1938
MIKOYAN (ex-Otto Schmidt)	Nikolayev	1938	1939

- Displacement, tons 11 000
- Measurement, tons 4 866 gross
- Dimensions, feet 335.8 pp; 351 oa x 75.5 x 22
- Aircraft 1 helicopter
- Main engines Triple expansion with diesel-electric propulsion for cruising; 3 shafts; 10 050 hp = 15.5 knots
- Boilers 9
- Fuel, tons 4 000 coal; and diesel oil
- Complement 142

3 aircraft and 1 catapult were included in the design. All in the White Sea. *Admiral Makarov* (ex-Vyacheslav Molotov, was reported in 1967 being scrapped in Spain.



MIKOYAN after refit

1965, col Breyer

SEVMORPUT

Displacement, tons 6 000
 Main engines 3 shafts; speed = 11.5 knots
 Of medium size and low power. Built at Leningrad. Launched in May 1937.

SIBIRYAKOV (ex-Jääkarhu)

Displacement, tons 4 825
 Dimensions, feet 246 × 63 × 21
 Main engines Triple expansion; 3 shafts; 9 200 ihp = 15 knots
 Boilers 8; oil fuel
 Launched by Smit. Rotterdam in 1926. Formerly Finnish. Appropriated by USSR.



SIBIRYAKOV

P. Bronsveld

Ex-KRISJANS VALDEMARAS

Displacement, tons 2 800
 Measurement, tons 1 932 gross
 Dimensions, feet 196.5 × 55.7 × 22
 Main engines Triple expansion; 5 200 ihp = 15 knots
 Fuel, tons 350 coal
 Complement 55

Built by Beardmore and launched in 1925. Renamed now. Formerly a Latvian ship. Photograph in the 1957-58 and earlier editions.

KRASSIN (ex-Sviatogor)

Displacement, tons 9 300
 Measurement, tons 4 902 gross
 Dimensions, feet 297 wl, 323.2 oa × 71 × 26
 Main engines 3 sets triple expansion; 3 shafts; 10 000 ihp = 15 knots
 Boilers 10 single-ended
 Fuel, tons 3 200 coal
 Complement 190

Built by Armstrong and launched in 1917. In the Baltic. Reported to have been converted into a floating museum at Archangel. Photograph in 1951-52 and earlier editions.

VLADIMIR ILYICH (ex-Lenin, ex-Aleksandr Nevskii)

Displacement, tons 6 260
 Measurement, tons 3 828 gross
 Dimensions, feet 273 wl, 281 oa × 64 × 19 (mean); 20.5 (max)
 Main engines 3 sets triple expansion; 3 shafts; 8 000 ihp = 12 knots
 Boilers 8
 Fuel, tons 1 200 coal
 Complement 122

Launched by Armstrong in 1917. Refitted on the Mersey in 1946-47. In the Baltic.



VLADIMIR ILYICH

1954, Keith P. Lewis

MALYGIN (ex-Voima)

Displacement, tons 2 070
 Dimensions, feet 210.7 × 46.5 × 16.8
 Main engines Triple expansion; 1 shaft; 4 100 ihp = 13.5 knots

Former Finnish icebreaker. Built by Sandvikens and launched in 1917. In the Baltic. Photograph in the 1957-58 and earlier editions.

STEPAN MAKAROV (ex-Knyaz Pozharski)

Displacement, tons 3 150 standard
 Measurement, tons 2 156 gross
 Dimensions, feet 236 pp; 248 oa × 57 × 22
 Main engines Triple expansion; 3 shafts; 6 400 ihp = 14.5 knots
 Boilers 6
 Fuel, tons 700 coal

Built by Swan, Hunter and Wigham Richardson, Ltd, Wallsend-on-Tyne, and launched in 1916. In the Black Sea. Photograph in the 1951-52 and earlier editions.

**LEDOKOL 1
LEDOKOL 2****VLADIMIR RUSANOV** (ex-Ladokol 7)**LEDOKOL 3
LEDOKOL 5****VASILY POYARKOV** (ex-Ladokol 4)**LEDOKOL 6
LEDOKOL 8**

Displacement, tons 2 500 standard
 Measurement, tons 2 305 gross
 Dimensions, feet 223 × 59 × 18
 Main engines 3 shafts; speed = 13 knots

All built at Leningrad between 1962 and 1965. Divided between the Baltic, Black Sea and Far East.



LEDOKOL 7

1965, courtesy Mr Michael D. J. Lennon

DOBRINYA NIKITICH

Displacement, tons 2 460 standard
 Measurement, tons 1 664 gross
 Dimensions, feet 200 pp; 211 oa × 50.5 × 20
 Main engines Triple expansion; 2 shafts; 4 000 ihp = 14 knots
 Boilers 6
 Fuel, tons 370 coal

Built by Swan Hunter and Wigham Richardson, Ltd, Wallsend-on-Tyne, and launched in 1916. In the Black Sea. Photograph in the 1951-52 and earlier editions.

VOLYNETS (ex-Suur Töll, ex-Vainamoinen, ex-Volynets, ex-Tsar Mikhail Fyodorovich)

Displacement, tons 4 000
 Dimensions, feet 236.5 × 57 × 18.8
 Main engines 3 sets triple expansion; 3 shafts; 5 800 ihp = 13.5 knots
 Fuel, tons 800 coal

Former Estonian icebreaker. Launched in 1914. In the Baltic. Photograph in the 1957-58 and earlier editions.

SADKO (ex-Lintrose)

Displacement, tons 2 000
 Measurement, tons 1 613 gross
 Dimensions, feet 255 × 37.5 × 21
 Main engines Triple expansion; 3 500 ihp = 14 knots
 Boilers 4

Built by Swan, Hunter and Wigham Richardson, Ltd, Wallsend-on-Tyne. Launched in 1913. Transferred from the Canadian Government in 1915. Sunk during the First World War off the Arctic coast of the USSR where she lay for many years until raised and refitted in the White Sea. Photograph in the 1957-58 and earlier editions.

TAIMYR

Displacement, tons 1 290 standard
 Main engines Speed = 10.5 knots

Launched in 1909. In the White Sea. Photograph in the 1951-52 and earlier editions.

GEORGII SEDOV (ex-Beothic)

Displacement, tons 3 217
 Measurement, tons 1 383-1 588 gross
 Dimensions, feet 240.5 × 36 × 16.5
 Main engines Triple expansion; 3 000 ihp = 13.5 knots
 Fuel, tons 500 coal

Built in 1909 by D. & W. Henderson & Co. Purchased in 1915. In the White Sea. Sister ship *Vladimir Rusanov* (ex-Bonaventure) was scrapped.

MONTCALM

Measurement, tons 3 270
 Measurement, tons 1 432 gross
 Dimensions, feet 245 × 40.5 × 15.8
 Main engines 2 sets triple expansion; 2 shafts; 3 225 ihp = 14 knots
 Boilers 4 Babcock & Wilcox
 Fuel, tons 425 coal

Built by Napier & Miller and launched in 1904. Transferred from the Canadian Government in 1942. In the Far East. It is doubtful if this ship is still operational.

Most of the above icebreakers are immensely strong in framing and scantlings, with exceptionally thick plating, and decks strengthened for mounting guns in war.

DISPOSALS

Devidov (ex-Krasnyi Oktyabr, ex-Nadyazhnyi) was discarded in 1959. *Fyodor Litke* (ex-Kanada, ex-Earl Grey) is also reported to have been scrapped about that time. *Vladimir Rusanov* (ex-Bonaventure) was scrapped about 1963, and *Yermak* was scrapped in 1965.

URUGUAY

Administration
Inspector General of the Navy:
Rear Admiral Pedro Torres Negreira

Diplomatic Representation
Naval Attaché in Washington:
Captain Eduardo A. Laffitte

Mercantile Marine
Lloyds' Register of Shipping
39 vessels of 113,286 tons gross

FRIGATES

Name
ARTIGAS (ex-USS *Bronstein* DE 189)
URUGUAY (ex-USS *Baron*, DE 166)

No.
DE 2
DE 1

Builders
Federal SB & DD Co, Pt. Newark
Federal S8 & DD Co Pt. Newark

Launched
14 Nov 1943
9 May 1943

Completed
13 Dec 1943
5 July 1943

2 Ex-U.S. Destroyer Escort Type
(Escort Vessels, DE)
"Bostwick" Class

Displacement, tons 1 240 standard; 1 900 full load
Length, feet (metres) 306 (93.3) oa
Beam, feet (metres) 37 (11.3)
Draught, feet (metres) 17 (5.2)
Guns, dual purpose 3—3 in (76 mm)
Guns, AA 2—40 mm (see *Gunnery* notes)
A/S Hedgehog; 8 DCT; 1 DCR (see
Torpedo Tubes notes)
Main engines Diesel-electric
6 000 bhp; 2 shafts
Speed, knots 19
Radius, miles 8 300 at 14 knots
Oil fuel (tons) 315 (95 per cent)
Complement 159



ARTIGAS

Uruguayan Navy, Official

Former United States destroyer escorts of the "Bostwick" class, transferred to Uruguay in 1951.

GUNNERY. Formerly also mounted ten 20 mm anti-aircraft guns, but these have been removed.

TORPEDO TUBES. The three 21-inch torpedo tubes in a triple mounting, originally carried, were suppressed.

APPEARANCE. Practically identical, but *Uruguay* can be distinguished by the absence of a mainmast, whereas *Artigas* has a diminutive pole mast aft.



URUGUAY

Uruguayan Navy, Official

Name
MONTEVIDEO (ex-HMCS *Arnprior*, ex-HMS *Rising Castle*)

No.
PF 1

Builders
Harland & Wolff, Ltd Belfast

Laid down
21 June 1943

Launched
8 Feb 1944

Completed
26 June 1944

Ex-British Corvette Type
Training Ship (Buque Escuela)
"Castle" Class

Displacement, tons 1 010 standard; 1 600 full load
Length, feet (metres) 251.8 (76.7)
Beam, feet (metres) 36.7 (11.2)
Draught, feet (metres) 17.5 (5.3) max
Guns, dual purpose 1—3 in (76 mm)
Guns, AA 2—40 mm; 4—20 mm
A/S Hedgehog; 4 DCT; 1 DCR
Boilers 2 water tube
Main engines Triple expansion, 190 rpm
2 750 ihp
Speed, knots 17
Radius, miles 5 400 at 9.5 knots
Oil fuel (tons) 480 max
Complement 90



MONTEVIDEO

Uruguayan Navy, Official

Former successively British and Canadian "Castle" class corvette (frigate). Employed as a training ship.

ESCORT VESSEL

COMMANDANTE PEDRO CAMPBELL, MSF 1 (ex-USS *Chickadee*, MSF 59)

Displacement, tons 890 standard; 1 250 full load
Dimensions, feet 215 wl; 221.2 oa x 32.2 x 10.8
Guns 1—3 in, 50 cal dp; 2—40 mm AA
Main engines Diesel electric; 2 shafts; 3 118 bhp = 18 knots
Complement 105

SURVEY SHIP

CAPITAN MIRANDA AGS 10

Displacement, tons 516 standard; 549 full load
Dimensions, feet 148 pp; 179 oa x 26 x 10.5
Main engines 1 MAN diesel; 500 bhp = 11 knots
Oil fuel, tons 37
Complement 52

Former United States fleet minesweeper of the "Auk" class. Built by Defoe B. & M. Works. Launched on 20 July 1942. Transferred on loan and commissioned at San Diego, Calif on 18 Aug 1966. Employed as PCE, escort petrol vessel, or corvette.

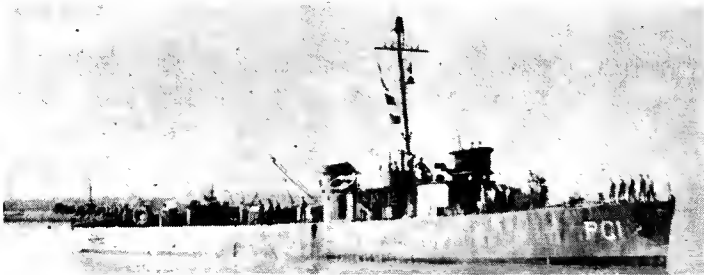
Built by Sociedad Española de Construcción Naval, Matagorda, Cádiz. Launched in 1930. Used as general utility tender. A photograph appears in the 1932 to 1957-58 editions.

PATROL VESSELS

1 Ex-U.S. PC Type

MALDONADO (ex-USS PC 1234) PC 1 (ex-B 1)
Displacement, tons 280 standard; 450 full load
Dimensions, feet 165 pp; 170 wl; 173-7 oa x 23 x 10-8
Guns 1-3 in dp; 1-40 mm, 3-20 mm
A/S weapons 1 MT, 4 DCT
Main engines 2 GM diesels, 2 shafts; 3 750 bhp = 19 knots
Complement 65

Former United States submarine chaser. Built in New York. Launched on 3 Apr 1943. Transferred from the US Navy in 1944.



MALDONADO

Uruguayan Navy, Official

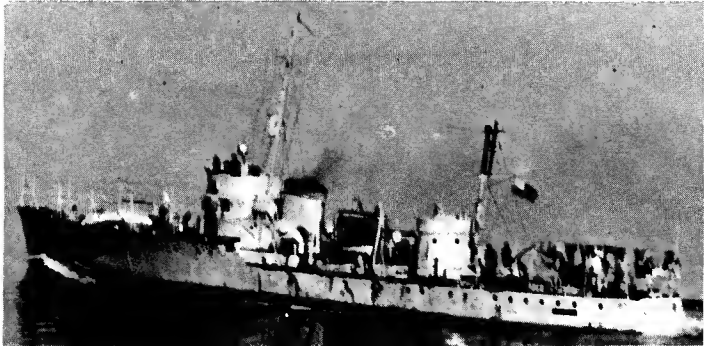
2 "Paysandu" Class

RIO NEGRO PR 3

SALTO PR 2

Displacement, tons 150 standard; 180 full load
Dimensions, feet 137 x 18 x 10
Guns 1-40 mm AA
Main engines 2 Germania diesels; 1 000 bhp = 17 knots
Oil fuel, tons 18
Radius, miles 4 800 at 10-7 knots
Complement 26

Training ships. Built by Cantieri Navali Riuniti, Ancona, Italy. Launched on 22 Aug 1935 and 11 Aug 1935, respectively. Sister ship *Paysandu* was stricken in 1963.



RIO NEGRO

courtesy Dr Giorgio Arra

RESCUE MOTOR LAUNCH
(Lancha de Rescate)

AR1

Displacement, tons 25 standard
Dimensions, feet 63 x 15 x 3-8
Guns 4 MG
Main engines 2 sets Hall-Scott Defender engines 1 260 bhp = 33-5 knots
Radius, miles 600 at 15 knots
Complement 8

British type rescue motor launch. Launched on 4 July 1944. A photograph of AR 1 appears in the 1953-54 to 1957-58 editions.

OILER

PRESIDENTE ORIBE AO 9

Measurement, tons 17 920 gross; 28 267 deadweight
Dimensions, feet 587 2 pp; 620 oa x 84 3 x 33
Main engines 1 Ishikawajima turbine; 12 500 shp = 16-75 knots
Boilers 2 Ishikawajima-Harima Foster Wheeler type
Radius, miles 16 100 at 16 knots
Complement 76

Built by Ishikawajima-Harima Ltd, Japan. Delivered to the Uruguayan Navy on 22 Mar 1962.



PRESIDENTE ORIBE

Uruguayan Navy, Official

TUG

YTL 589 (ex-US No.)

Transferred from the United States Navy in Sep 1965 under the Military Aid Programme

VIETNAM (NORTH)

Administration

Commander-in-Chief of the Navy:
Rear Admiral Ta Xuan Thu

Strength of the Fleet

3 Patrol Vessels
15 Motor Torpedo Boats
28 Motor Gunboats
4 Minesweeping Boats
30 Patrol Craft
10 Service Craft

Personnel

1967: 3,000 (270 officers and 2,730 men;

PATROL VESSELS

3 U.S.S.R. "S.O.I." Type

Displacement, tons 215 light; 250 normal
Dimensions, feet 138 pp; 147 oa x 20 x 10 max
Guns 4-25 mm (2 twin mountings)
A/S weapons 4 ahead throwing rocket launchers; 2 DCT
Main engines 3 diesels; 3 500 bhp = 28 knots
Complement 30

Four submarine chasers of the Soviet "SOI" class transferred to North Vietnam, two in 1960-61 and two in 1964-65, but one was sunk by US Navy aircraft 20° 24' N, 106° 56' E on 1 Feb 1966. (A patrol ship was sunk by USAF aircraft off North Vietnam on 4 Mar 1967).

MOTOR TORPEDO BOATS

3 U.S.S.R. "P 6" Type

Displacement, tons 50 standard
Dimensions, feet 82 x 16 B x 5 5
Guns, 2-25 mm AA
Tubes 2-21 in (single)
Main engines Speed = 40 knots

Wooden hulled MTBs of the "P 6" class built in China and transferred in 1957 and 1964.

12 U.S.S.R. "P 4" Type

Displacement, tons 50 standard
Dimensions, feet 85 5 x 20 x 6
Guns 4-25 mm AA (2 twin)
Main engines Diesels; 2 000 bhp = 42 knots

Aluminium hulled MTBs of the Soviet "PA 4" class transferred from the USSR in 1961 and 1964. A fast patrol boat, PTF 1, is reported.

LOSSES. Three motor torpedo boats were sunk off Haiphong by US Navy aircraft on 1 July 1966, and four were destroyed in the Gulf of Tonkin by US Navy aircraft on 7 July 1966. Two torpedo boats were sunk and two others damaged in attacks by USN aircraft off Haiphong on 17 Sep 1966.

MOTOR GUNBOATS

4 Ex-Chinese "Shanghai" Type

Displacement, tons 100 full load
Dimensions, feet 83-5 x 20 x 6
Guns 4-37 mm (2 twin); 2-12-7 mm
A/S weapons 8 depth charges
Main engines 4 diesels; 4 800 bhp = 40 knots
Complement 17

Received from the People's Republic of China (Communist) Navy in May 1966.

24 U.S.S.R. "Swatow" Type

Displacement, tons 67 full load
Dimensions, feet 83 5 x 20 x 6
Guns 2-37 mm; 2-20 mm
A/S weapons 8 depth charges
Main engines 4 diesels; 4 800 bhp = 40 knots
Complement 17

Some 30 "Swatow" class motor gunboats built in China were transferred in 1958, and 20 in 1964 to replace those lost in action. Pennant numbers of 3 digits in a 600 series.

LOSSES. One MTB/MGB was sunk and 2 heavily damaged on 23 Aug, two sunk and two damaged on 24 Aug, one sunk and one damaged on 31 Aug, all in Gulf of Tonkin, and three sunk and two damaged at Hon Gay Harbour, North Vietnam, on 7 Aug, all in 1966 by USN aircraft. A motor gunboat was destroyed by US Navy aircraft on 31 Aug 1965. Five were sunk by air strikes on 2 Mar 1965. Previous losses include eleven MGB/MTBs, see full details in the 1965-66 edition.

MINESWEEPING BOATS

4 Patrol Type

Four vessels for sweeping, patrol and general purpose duties have been reported.

PATROL CRAFT

30 Motor Launch Types

Reported to have been incorporated into the North Vietnam Navy by May 1966. On 14 Mar 1967 five patrol boats were destroyed or damaged by USN aircraft in the Gulf of Tonkin.

SERVICE CRAFT

10 General Utility Types

Tenders and launches commandeered to serve the fleet and naval establishments.

VENEZUELA

Administration
Commander General of the Navy:
(Chief of Naval Operations)
Rear-Admiral Juan P. Torrealba M

Chief of Naval Staff:
Rear-Admiral Jesus Carbonel J.

Diplomatic Representation
Naval and Military Attaché in London:
Major General M. A. Morin

Naval Attaché in Washington:
Rear-Admiral Guillermo Ginnari-Troconis

Strength of the Fleet
1 Submarine (Diesel Powered)
3 Destroyers
6 Fast Frigates (Light Destroyers)
12 Patrol Vessels (Submarine Chasers)
4 Medium Landing Ships
23 Support Ships and Service Craft

Personnel
1967: 3,200 naval officers and men
2,500 Marine Corps

New Construction Programme
Programme includes 1 cruiser, 2 to 4 submarines
and several minesweepers

Mercantile Marine
Lloyd's Register of shipping:
83 vessels of 314,522 tons gross

SUBMARINES

Name	No.
CARITE (ex-USS <i>Tilefish</i> , SS 307)	S 11

Builders
Mare Island Naval Shipyard, California

Launched
25 Oct 1943

Commissioned
28 Dec 1943

1 + 1 Ex-U.S. "Balao" Class

Displacement, tons	1 526 standard; 1 816 surface; 2 425 submerged
Length, feet (metres)	312 (91.8) oa
Beam, feet (metres)	27 (8.2)
Draught, feet (metres)	17 (5.2)
Torpedo tubes	10—21 in (533 mm), 6 bow, 4 stern
Main engines	Diesels, 6 400 bhp, 2 shafts Electric motors, 4 600 hp
Speed, knots	20 on surface; 10 submerged
Radius, miles	12 000 at 10 knots
Oil fuel (tons)	300
Complement	80

Former United States submarine of the "Balao" class. Purchased by Venezuela in 1960 after a three to four months overhaul in the United States. Transferred from the US Navy at San Francisco on 4 May 1960. Overhauled in San Francisco Navy Yard in 1962.

TRANSFER. The transfer of a second submarine by the USA to Venezuela was approved by the US House Armed Service Committee in Aug 1965.

PHOTOGRAPHS. A starboard bow surface view of *Carite* appears in the 1962-63 to 1964-65 editions.



CARITE

1965, Venezuelan Navy, Official

DESTROYERS

3 "Nueva Esparta" Class

Displacement, tons	2 600 standard; 3 300 full load
Length, feet (metres)	384 (117.0) wl; 402 oa
Beam, feet (metres)	43 (13.1)
Draught, feet (metres)	12.8 (3.9)
Guns, dual purpose	6—4.5 (114 mm), 3 twin
Guns, AA	16—40 mm, 8 twin
A/S	2 DCT; 2 DC racks (Squids in D 11 and D 21)
Torpedo tubes	3—21 in (533 mm), triple
Boilers	2
Main engines	Parsons geared turbines 50 000 shp; 2 shafts
Speed, knots	34.5
Complement	254 (18 officers, 236 men)

All built in Great Britain by Vickers, Barrow-in-Furness. *Nueva Esparta* and *Zulia* were ordered in 1950. Cost of these first two ships was £5 000 000. Air conditioned. Two engine rooms and two boiler rooms served by a single uptake. The 4.5 inch guns are fully automatic. *Nueva Esparta* and *Zulia* were refitted at the Palmers Hebburn Works of Vickers in May—Dec 1959, and modernised at New York Navy Yard in 1960 to improve

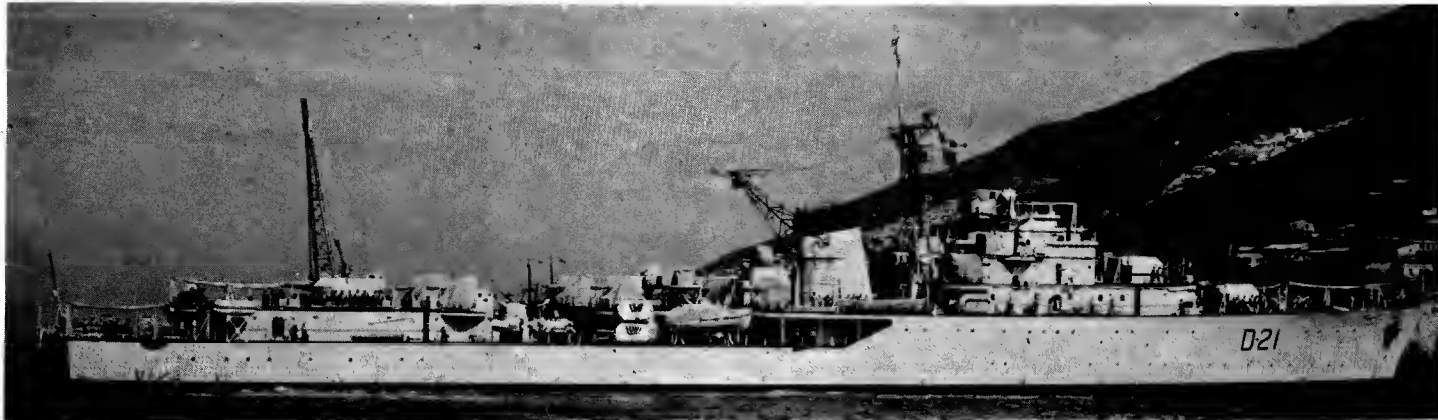
Name	No.	Builders	Laid down	Launched	Completed
ARAGUA	D 31	Vickers Ltd, Barrow	29 June 1953	27 Jan 1955	14 Feb 1956
NUEVA ESPARTA	D 11	Vickers Ltd, Barrow	24 July 1951	19 Nov 1952	8 Dec 1953
ZULIA	D 21	Vickers Ltd, Barrow	24 July 1951	29 June 1953	15 Sep 1954



ARAGUA

1966, Venezuelan Navy, Official

anti-submarine and anti-aircraft capabilities *Aragua* A photograph of *Nueva Esparta* appears in the 1962-63 to 1965-66 editions.



ZULIA

1966, Venezuelan Navy, Official

FAST FRIGATES

6 "Almirante Clemente" Class
(Light Destroyer Type)

Displacement, tons	1 300 standard; 1 500 full load
Length, feet (metres)	320.2 (97.6) oa
Beam, feet (metres)	35.5 (10.8)
Draught, feet (metres)	8.5 (2.6)
Guns, dual purpose	4—4 in (102 mm); 2 twin
Guns, AA	4—40 mm; 8—20 mm
A/S	2 Hedgehogs or squid; 4 DCT
Torpedo tubes	3—21 in (533 mm) triple
Boilers	2 Foster Wheeler
Main engines	2 sets geared turbines
	25 000 shp; 2 shafts
Speed, knots	34
Radius, miles	3 500 at 17 knots
Oil fuel (tons)	350
Complement	162 (12 officers, 150 men)

All built in Italy by Ansaldo, Leghorn. The first three were ordered in 1953. Three more were ordered in 1954. Aluminium alloys were widely employed in the building of all superstructure. All the ships are fitted with Denny-Brown fin stabilisers and air conditioned throughout the living and command spaces.

MODERNISATION. *Almirante José Gracia*, *Almirante Brion* and *General José de Austria* were refitted by Ansaldo, Leghorn, in 1962 to improve their anti-submarine and anti-aircraft capabilities.

GUNNERY. The 4 inch anti-aircraft guns are fully automatic and radar controlled.

PHOTOGRAPHS. A photograph of *Almirante Clemente* appears in the 1957-58 edition, of *General Juan José Flores* in the 1957-58 to 1961-62 editions, of *General José de Austria* in the 1962-63 to 1964-65 editions, and of *General José Trinidad Moran* in the 1962-63 to 1965-66 editions.

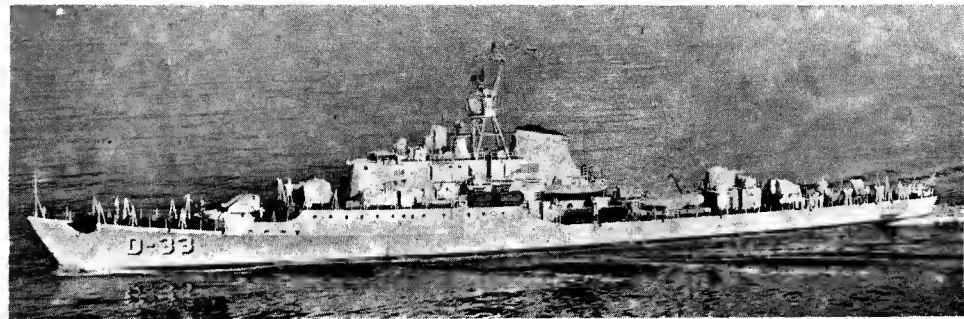
DISPOSALS OF "FLOWER" CLASS
Of the former Canadian "Flower" type frigates *Carabobo* (ex-Kemsack) was lost on passage from Canada *Libertad* (ex-Battleford) ran aground off western Venezuela on 12 Apr 1949 and was discarded, *Independencia* (ex-Dunvegan) was stricken from the Navy List in 1953, *Federacion* (ex-Amherst) was stricken in 1956, and *Constitucion* (ex-Algoma), *Patria* (ex-Oakville) and *Victoria* (ex-Wetaskiwin) were officially deleted from the Navy List in 1962.

Name	No.	Laid down	Launched	Completed
ALMIRANTE CLEMENTE	D 12	5 May 1954	12 Dec 1954	1956
ALMIRANTE JOSÉ GARCIA	D 33	12 Dec 1954	12 Oct 1956	1957
ALMIRANTE BRION	D 23	12 Dec 1954	4 Sep 1955	1957
GENERAL JOSÉ DE AUSTRIA	D 32	12 Dec 1954	15 July 1956	1957
GENERAL JOSÉ TRINIDAD MORAN	D 22	5 May 1954	12 Dec 1954	1956
GENERAL JUAN JOSÉ FLORES	D 13	5 May 1954	7 Feb 1955	1956



GENERAL JUAN JOSÉ FLORES

1966, Venezuelan Navy, Official



ALMIRANTE JOSÉ GARCIA

1965, Venezuelan Navy, Official

PATROL VESSELS

12 Ex-U.S. PC Type

ALBATROS (ex-USS PC 582) P-04	GAVIOTA (ex-USS PC 619) P-10
ALCATRAZ (ex-USS PC 565) P-03	PETREL (ex-USS PC 1176) P-05
CALAMAR (ex-USS PC 566) P-02	PULPO (ex-USS PC 465) P-07
CAMARON (ex-USS PC 483) P-08	MEJILLON (ex-USS PC 487) P-01
CARACOL (ex-USS PC 1170) P-06	TOGOGO (ex-USS PC 484) P-09
Displacement, tons	280 standard; 430 full load
Dimensions, feet	170 wl; 173.7 oa x 23 x 10.8
Guns	1—3 in dp; 1—40 mm AA; 5—20 mm AA
A/S weapons	Provision for 4 DCT
Main engines	2 Fairbanks-Morse diesels; 2 shafts; 2 800 bhp = 20 knots
Complement	65

Mejillon was refitted and overhauled by Diques y Astilleros Nacionales, Venezuela, prior to commissioning in the Venezuelan Navy, and from 1962 onwards more ships of this type underwent similar preparation to join the fleet. Altogether twelve of these former United States submarine chasers of the steel-hulled "173-ft" type were purchased from the USA in Oct 1960 for anti-smuggling patrols, namely:—*Cooperstown* PC 484, *Dalhart* PC 619, *Edenton* PC 1077, *Gilmer* PC 565, *Honesdale* PC 566, *Larchmont* PC 487, *Lenoir* PC 582, *Minden* PC 1176, *Paragould* PC 465, *Rolla* PC 483, *Tarrytown* PC 1252 and *Tooele* PC 572, and with these the Navy is assuming Coast Guard functions.



ALBATROS (Petrel in rear)

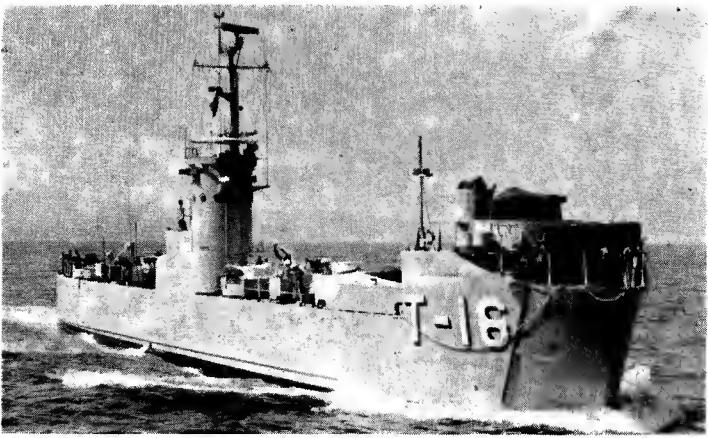
1966, Venezuelan Navy, Official

MEDIUM LANDING SHIPS

Ex-U.S. LSM Type

LOS FRAILES T 15 (ex-USS LSM 544)	LOS ROQUES T 14 (ex-USS LSM 543)
LOS MONJES T 13 (ex-USS LSM 548)	LOS TESTIGOS T 16 (ex-USS LSM 545)
Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa x 34.5 x 8.3
Guns	1—40 mm AA; 4—20 mm AA
Main engines	Direct drive diesels; 2 shafts; 2 800 bhp = 12 knots
Complement	59

All built by Brown Shipbuilding Co, Houston, Texas, in 1945. (The former United States medium landing ships LSM 370, LSM 542, LSM 543, LSM 544, LSM 545 and LSM 548 were sold to Venezuela under MAP in Aug 1958, but only the latter four have been commissioned in the Venezuelan Navy).



LOS TESTIGOS

1962, Venezuelan Navy, Official

COAST GUARD VESSELS

8 "Rio" Class

RIO APURE RIO ARAUCA	RIO CABRIALES RIO CARONI	RIO GUARICO RIO NEGRO	RIO NEVERI RIO TUY
Displacement, tons	38		
Dimensions, feet	82 x 15 x 4		
Main engines	2 Mercedes-Benz MB 820 Bb diesels; 1 400 rpm; 1 350 bhp = 27 knots; 24—25 knots cruising		

All built by the Chantiers Navales de l'Esteres, Cannes, during 1954-56.



RIO CABRIALES 1956 Venezuelan Navy, Official

RIO SANTO DOMINGO

Displacement, tons	40
Dimensions, feet	70 x 15 x 6
Main engines	2 GM diesels; 1 250 bhp = 24 knots

RIO TURBIO

Displacement, tons	40
Dimensions, feet	81.3 x 15 x 7.5
Main engines	4 GM diesels; 880 bhp = 20 knots

GOLFO DE CARIACO

Displacement, tons	37
Dimensions, feet	65 x 18 x 9
Main engines	Diesels; speed = 19 knots

DISPOSALS

The survey launch *Torbes*, and the repair launch BT 1 were officially stricken from the list in 1962. *Caribe* was scrapped in 1956.

MOTOR LAUNCH

TORBES (ex-Felipe Santiago Esteves, LC 12, ex-Brion CS 2) LA 12

Displacement, tons	47
Dimensions, feet	83 x 16 x 4
Guns	1—20 mm; 4 DCT
Main engines	2 petrol engines; 2 shafts; 1 200 bhp = 15 knots
Complement	10

Launched in 1937. Ex-US Coast Guard cutter 56196. Acquired in 1944. Of wooden construction. *Brion* was renamed *Felipe Santiago Esteves* in 1957 when LC pennant number was allocated and renamed *Torbes* No. LA 12, in 1962.

DISPOSALS

Antonio Diaz LC 11 (ex-CS 1, ex-56193), *Arismendi* LC 14 (ex-CS 4, ex-56194) and *Briceno Mendez* LC 13 (ex-CS 3, ex-56195) were stricken in 1960.

TRANSPORTS

PUNTA CABANA T 17

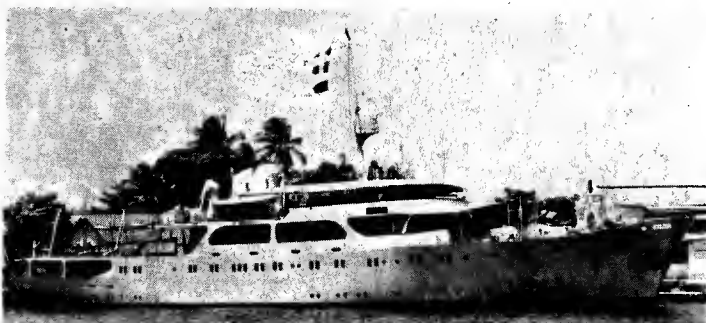
T 19

Three small troop carriers of about 3 000 tons with a speed of 17 knots are reported for the Army.

LAS AVES (ex-Dos de Diciembre) T 12

Displacement, tons	944
Dimensions, feet	234.2 oa x 33.5 x 10
Main engines	2 diesels; 2 shafts; 1 600 bhp = 15 knots
Radius, miles	2 250 at 15 knots

Launched by Chantiers Dubigeon, Nantes-Chantenay, France, in 1954. Light transport for naval personnel. Originally named *Dos de Diciembre*. Redesignated T 12 in 1958. Renamed *Las Aves* in 1961.



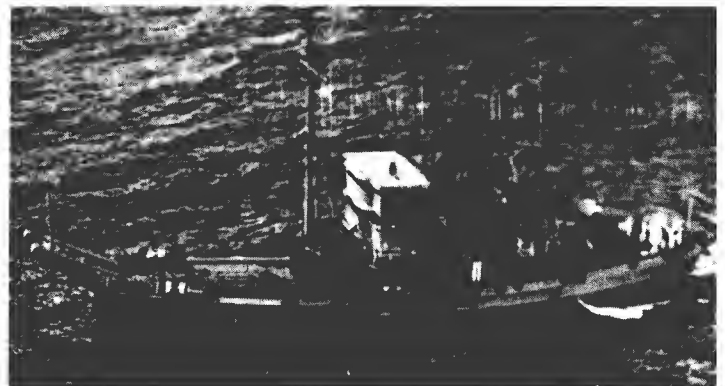
LES AVES Venezuelan Navy, Official

SURVEY SHIPS

3 "Puerto" Class

PUERTO DE NUTRIAS (ex-USS <i>Tunxis</i> , AN 90)	H-01
PUERTO MIRANDA (ex-USS <i>Waxsaw</i> , AN 91)	H-02
PUERTO SANTO (ex-USS <i>Marietta</i> , AN 82)	H-03
Displacement, tons	650 standard, 785 full load
Dimensions, feet	146 wl; 168.5 oa x 33.9 x 10.2 max
Main engines	Bush-Sulzer diesel-electric; 1 shaft; 1 500 bhp = 12 knots
Complement	46

Former United States netlayers of the "Cohoes" class. *Puerto Santo* was built by Commercial Iron Works, Portland, Oregon. Laid down on 17 Feb 1945 and launched on 27 Apr 1945. Transferred on loan from the US Navy in Jan 1961 under MAP and converted into a hydrographic survey vessel and buoy tender by the United States Coast Guard Yard, Curtis Bay, Maryland, in Feb 1962. She originally carried one 3-inch 50 cal dual purpose gun. *Puerto du Nutries* and *Puerto Mirende* were built by Zenith Bridge Co, Duluth, Minn, launched in 1944 and completed in 1945. They were leased-loaned to Venezuela in 1963 under the Military Aid Programme.



PUERTO SANTO 1966, Venezuelan Navy, Official (US Coast Guard Photo)

REPAIR SHIP

QUIRINUS (ex-USS LST 1151) ARL 39

Displacement, tons	1 625 light; 3 960 trials, 4 100 full load
Dimensions, feet	316 wl; 328 oa x 50 x 11.2 max
Guns	8—40 mm AA (two quadruple mountings)
Main engines	GM diesels; 2 shafts; 1 800 bhp = 11.6 knots
Complement	21 officers, 232 men

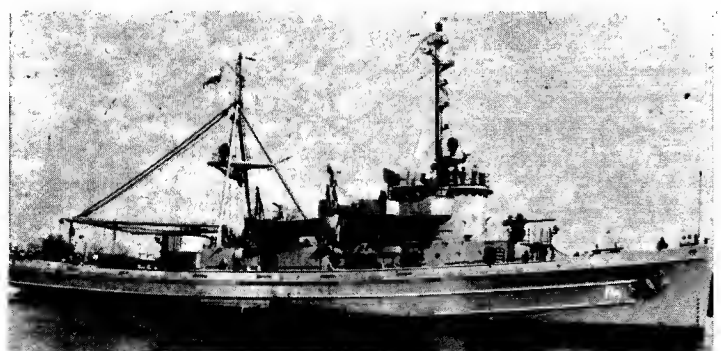
Former United States landing craft repair ship. Built by Chicago Bridge and Iron Co, Seneca, Illinois. Laid down on 3 Mar 1945. Loaned to Venezuela in June 1962.

TUGS

FELIPE LARRAZABAL R 11 (ex-USS *Tolowa*, ATF 116)

Displacement, tons	1 235 standard; 1 675 full load
Dimensions, feet	195 wl; 205 oa x 38.5 x 15.3 max
Guns	1—3 in; 4—40 mm AA; 2—20 mm AA
Main engines	4 diesels with electric drive; 3 300 bhp = 16.5 knots
Complement	85

Former United States fleet ocean tug of the "Apache" class. Built by United Engineering Co, Alameda, California. Laid down on 28 July 1943, launched on 17 May 1944, and completed on 26 Dec 1944. Transferred on loan from the US Navy in Feb 1962. The former tug *Felipe Larrazabal* (ex-USS *Discoverer*, ex-USCG *Auk* AM 38) was stricken in 1962 and *Esteban Rojas*, *Dina* and *Caracas* in 1958.



FELIPE LARRAZABAL 1962, Venezuelan Navy, Official

FERNANDO GOMEZ (ex-USS *Dadley*, YTM 744, ex-*Diana*, ex-US Army STB73) R 12

Displacement, tons	161
Dimensions, feet	80 x 19 x 8
Main engines	Clark diesel, 6-cyl, 315 rpm; 380 bhp = 15 knots
Complement	10

A photograph of this tug appears in the 1952-53 to 1957-58 editions.

GENERAL JOSE FELIX RIBAS R 13 (ex-USS *Oswegatchie*, YTM 778, ex-YTB 515)

Large harbour tug. Transferred on 4 June 1965 to San Diego, Calif. There are also medium harbour tugs ex-USS *Sessecus* (YTM-193) and TYM 385 loaned by USA.

VIETNAM

Administration
Commander-in-Chief:
Rear Admiral Nguyen Nuc Van

Chief of Naval Operations:
Commodore Tran Van Phan

Strength of the Fleet
6 Escorts
2 Patrol Vessels
3 Minesweepers
26 Gunboats
10 Landing Ships
21 Landing Craft
12 Mine Launches
20 Auxiliaries

Diplomatic Representation
Naval, Military and Air Attaché in Washington.
Colonel Nguyen Vinh Xuan

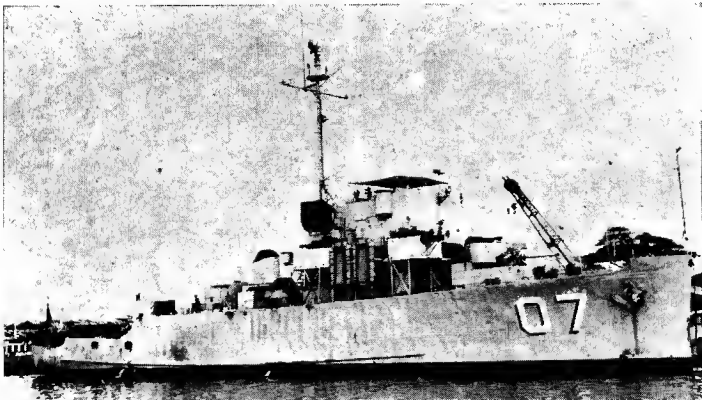
Personnel
1967: 16,000 officers and men

ESCORTS

DONG DA II (ex-USS *Crestview*, PCE 895) HQ 07
NGOC HOI (ex-USS *Brattleboro*, EPCEB 852) HQ 12

Displacement, tons 640 standard; 903 full load
Dimensions, feet 180 wl; 184 5 oa x 33 x 9 5
Guns 1—3 in, 50 cal dp; 6—20 mm AA
Main engines GM diesels; 2 shafts; 2 000 bhp = 15 knots
Complement 7 officers, 83 men

Dong Da II was built by the Willamette Iron and steel Corp, Portland, Oregon. Laid down on 2 Dec 1942, launched on 18 May 1943, completed on 30 Oct 1944. Served successively in the US Navy as escort vessel, submarine chaser, weather ship, reserve training ship and anti-submarine warfare evaluation ship. Transferred at Philadelphia Naval base on 29 Nov 1961 and renamed *Dong Da II*. *Ngoc Hoi* was built by Pullman Standard Car Mfg Co, Chicago, laid down on 28 Oct 1943, launched on 1 Mar 1944, completed on 26 May 1944. Formerly on experimental rescue, escort ship in the US Navy, she was transferred on 11 July 1966.

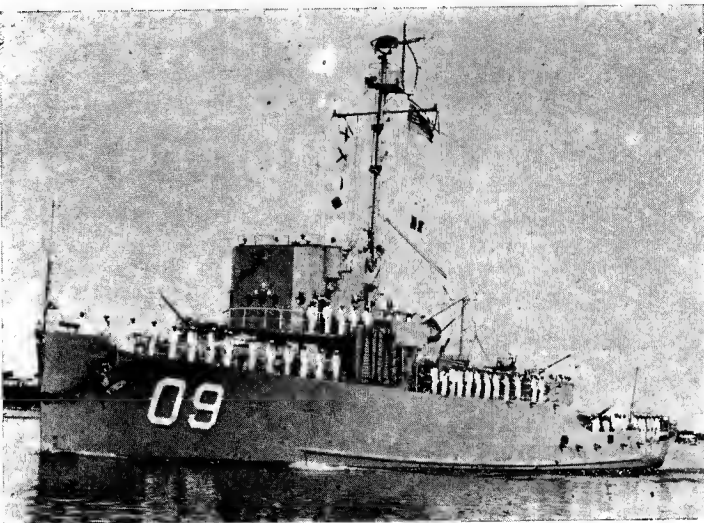


DONG DA II 1963, Vietnamese Navy, Official

CHI LANG II (ex-USS *Gayety*, MSF 239) HQ 08 19 Mar 1944
KU HOA (ex-USS *Sentry*, MSF 299) HQ 09 15 Aug 1943
NHUT TAO (ex-USS *Serene*, MSF 300) HQ 10 31 Oct 1943
CHI LINH (ex-USS *Shelter*, MSF 301) HQ 11 14 Nov 1943

Displacement, tons 650 standard; 945 full load
Dimensions, feet 180 wl; 184 5 oa x 33 x 9 8
Guns 1—3 in, 50 cal dp; 2—40 mm AA; 8—20 mm AA (4 twin)
A/S weapons 2 DCT
Main engines Diesels; 2 shafts; 1 710 bhp = 14 knots
Complement 7 officers, 83 men

Built by Winslow Marine Railway and Shipbuilding Co, Winslow, Washington. Laid down on 14 Nov 1943, 16 May 1943, 8 Aug 1943 and 16 Aug 1943, and completed on 23 Sep 1944, 30 May 1944, 24 June 1944 and 9 July 1944 respectively. Launch dates above. *Gayety* was transferred in June 1962 and renamed *Chi Lang II*. *Sentry* was converted into a patrol vessel by the Sun Shipbuilding and Dry Dock Co, Chester, Pennsylvania, the minesweeping gear replaced by increased depth charge storage, and transferred at Philadelphia, Pa in Aug 1962. *Serene* and *Shelter* were transferred on 16 Jan 1964. Employed as escort patrol vessels, not as minesweepers.



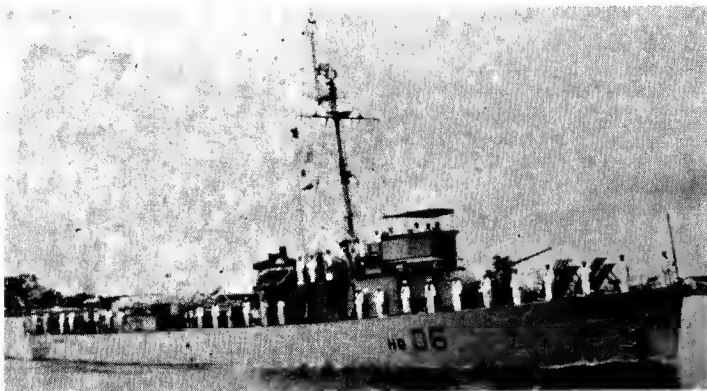
KY HOA 1963, Vietnamese Navy, Official

PATROL VESSELS

TUY DONG (ex-*Trident*, ex-USS PC 1143) HQ 04 25 Sep 1943
VAN DON (ex-*Anacortes*, PC 1569) HQ 06 9 Dec 1944

Displacement, tons 280 standard; 380 normal; 450 full load
Dimensions, feet 170 wl; 173 7 oa x 23 x 10 8
Guns 1—3 in dp; 1—40 mm; 4—20 mm AA
A/S weapons 2 DC; 2 RL
Main engines Diesel; 2 shafts; 2 800 bhp = 19 knots
Complement 6 officers, 54 men

Tuy Dong was built by Defoe SB Corp, Bay City, Mich, *Van Don* by Letham D. Smith SB Co. Launch dates above. Laid down on 17 Apr 1943 and 26 Sep 1944 respectively, and completed on 16 May 1944 and 14 Mar 1945. *Tuy Dong* is a former French *escorteur cotier* transferred in 1956. *Dan Don* was transferred at Seattle, Washington, on 23 Nov 1960. *Dong Da* (ex-French *Ardent*, ex-USS PC 1167) was stricken in 1961 and *Chi Lang* (ex-French *Mousquet* P633, ex-USS PC 1144) in 1961, their names allocated to larger vessels, *Tay Ket* HQ 05 (ex-French *Glaive*, ex-USS PC 1146) and *Van Kiep* HQ 02 (ex-French *Intrepide*, ex-USS PC 1130) on 10 July 1965 and 1 July 1965, respectively.



VAN DON 1966, Vietnamese Navy, Official

MOTOR GUNBOATS

26 Ex-U.S. PGM Type

DINH HAI HQ 610	KIM QUI HQ 605	THAI BINH HQ 612
HOA LU HQ 608	MAY RUT HQ 606	THI TU HQ 613
KEO NGUA HQ 604	MINH HOA HQ 602	TIEN MOI HQ 601
KIEN VANG HQ 603	NAM DU HQ 607	TO YEN HQ 609
	PHU DU HQ 600	TRUONG SA HQ 611

Displacement, tons 95 standard; 143 full load
Dimensions, feet 101 wl; 110 oa x 21 x 6
Guns 1—40 mm AA; 2—20 mm AA (1 twin); 2 MG
Main engines Diesels, 2 shafts; 1 900 bhp = 16 knots

Built in the United States, the first ten, HQ 600-609, five by J. M. Martinac Shipbuilding Corp, Tacoma, Washington (the last of which, PGM 63 was delivered in 1963), and five by Marinette Marine Corp, Wisconsin. The US hull numbers of the above names were PGM 69, 62, 68, 67, 60, 59, 66, 61, 64, 72, 73, 65, 63, 70, respectively.

Eight more motor gunboats, US hull numbers PGM 71, 74, 75, 76, 77, 78, 79, 80 have been built in USA for transfer. *Thai Binh* (ex-PGM 72), *Thi Tu* (ex-PGM 73) and HQ 614 (ex-PGM 74) were transferred on 10 Jan 1966. PGM 81, 82, 83, 91 are building in USA for transfer (names reported: *Lam Giang*, *Le Trong Dam*, *Nguyen Van Tru*).



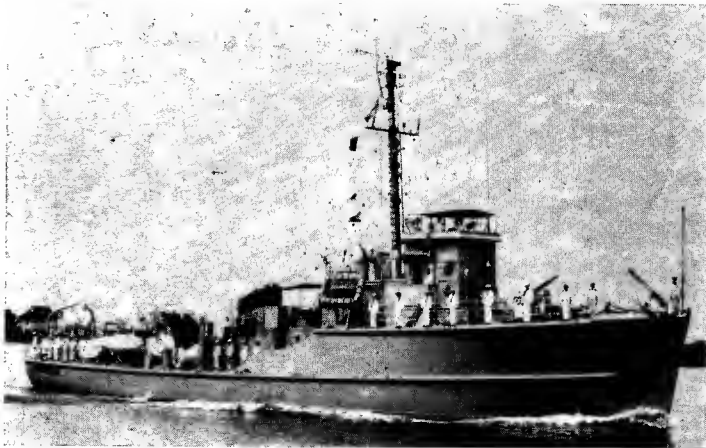
PHU DU 1963, Vietnamese Navy, Official

COASTAL MINESWEEPERS

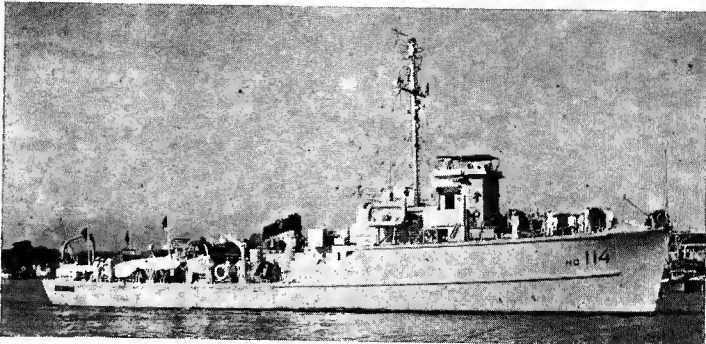
3 Ex-U.S. MSC Type

CHU'O'NG-DU'O'NG II (ex- <i>MSC</i> 282)	HQ 115
BACH DANG II (ex- <i>MSC</i> 283)	HQ 116
HAM TU II (ex- <i>MSC</i> 281)	HQ 114
Displacement, tons	320 standard; 370 full load
Dimensions, feet	138 pp; 144 oa x 28 x 9
Guns	2—20 mm AA
Main engines	2 diesels; 2 shafts; 1 200 bhp = 13 knots
Complement	4 officers, 41 men

United States coastal motor minesweepers of the "Bluebird" class, non-magnetic type, of wooden construction, transferred under the Mutual Defence Assistance Programme in 1959 and 1960.



CHU'O'NG-DU'O'NG II 1964, Vietnamese Navy, Official



HAM TU II 1960, Vietnamese Navy, Official

DISPOSALS
Of the three coastal minesweepers of the ex-US YMS type transferred from the French Navy on 11 Feb 1954. *Ham Tu* HQ 111 (ex-*Auberpine*, ex-D 315, ex-YMS 28) was removed from the effective list in 1958. *Bach Bang* HQ 113, (ex-*Belledone*, ex-D 318, ex-YMS 78) in 1963, and *Chu'o'ng-Du'o'ng* HQ 112 (ex-*Digitale*, ex-D 326, ex-YMS 83) in 1964.

TRAINING SHIP

1 Ex-U.S. FS Type

HOA GIANG (ex- <i>Dinr An</i> , ex- <i>Ingenieur en Chef Girod</i> , ex-FS 287, ex- <i>Governor Wright</i>)	HQ 451
Displacement, tons	950
Dimensions, feet	176 x 32.3 x 10.2
Main engines	2 GM diesels; 1 shaft; 1 000 bhp = 10 knots
Complement	4 officers, 36 men

Former French survey vessel (ex-US Army freighter), sold to Vietnam in Dec 1955. Formerly rated as a light cargo ship (AKL), or supply vessel, but adapted and reclassified as a training ship in 1966.

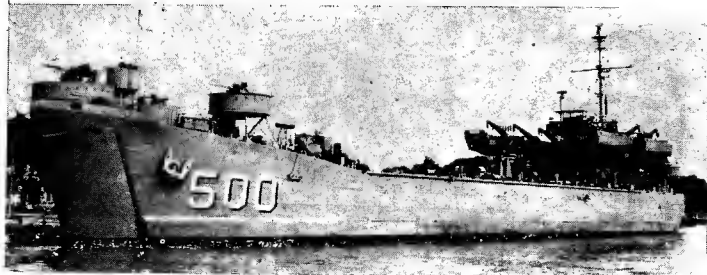


HOA GIANG 1963, Vietnamese Navy, Official

LANDING SHIPS

CAM RANH (ex-USS <i>Marion County</i> , LST 975)	HQ 500
DA NANG (ex-USS <i>Maricopa County</i> , LST 938)	HQ 501
THI NAI (ex-USS <i>Cayugo County</i> , LST 529)	HQ 502
Displacement, tons	2 366 beaching; 4 080 full load
Dimensions, feet	316 wl; 328 oa x 50 x 14
Guns	8—40 mm AA
Main engines	GM diesels; 2 shafts; 1 700 bhp = 11 knots
Complement	7 officers, 103 men

Cam Ranh and *Da Nang* were built by Bethlehem Steel Co, Hingham, Mass. Laid down on 1 Dec 1944 and 14 July 1944, launched on 6 Jan 1945 and 15 Aug 1944, and completed on 3 Feb 1945 and 9 Sep 1944, respectively. Transferred in June 1962. *Thi Nai*, built by Jeffersonville 8. & M. Co, Jefferson, Ind, laid down on 8 Nov 1943, launched on 17 Jan 1944 and completed on 29 Feb 1944 was transferred at Guam on 16 Dec 1963.

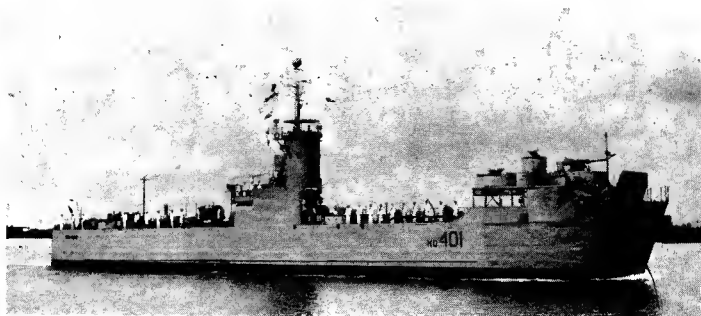


CAM RANH 1963, Vietnamese Navy, Official

HAU GIANG (ex- <i>LSM</i> 276)	HQ 406
HAN GIANG (ex- <i>LSM</i> 9012 ex-US <i>LSM</i> 110)	HQ 401
HAT GIANG (ex- <i>LSM</i> 9011, ex-US <i>LSM</i> 335)	HQ 400
LAM GIANG (ex- <i>LSM</i> 226)	HQ 402
HUONG GIANG (ex-USS <i>Oceanside</i> , <i>LSM</i> 175)	HQ 404
NINH GIANG (ex- <i>LSM</i> 85)	HQ 403
TIEN GIANG (ex- <i>LSM</i> 313)	HQ 405

Displacement, tons	743 beaching; 1 095 full load
Dimensions, feet	196.5 wl; 203.5 oa x 34.5 x 8.3
Guns	2—40 mm AA; 4—20 mm AA
Main engines	Diesel; 2 shafts; 2 800 bhp = 12 knots
Complement	5 officers, 70 men

Designed primarily to carry assault troops. First four were transferred to the French Navy for use in Indo-China, Jan 1954. *LSM* 9011, 9012 transferred to Vietnam Navy, Dec 1955. *LMS* 9014, 9017, 9018, returned to USA in 1955. *Oceanside* *LSM* 175, was transferred at Los Angeles, California, on 1 Aug 1961, and *LSM* 313 in 1962. *Hau Giang* (ex-*LSM* 276) on 10 June 1965. *Hat Giang* was converted into a hospital ship (*LSMH*) in 1966.

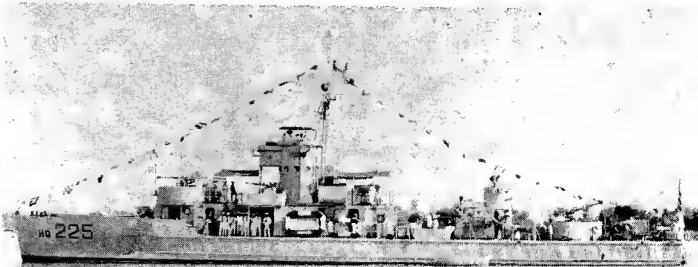


HAN GIANG 1965, Vietnamese Navy, Official

DOAN NGOC TANG (ex- <i>LSSL</i> 9)	HQ 228	15 Sep 1965
LE VAN BINH (ex- <i>LSSL</i> 10)	HQ 227	15 Sep 1965
LINH KIEM (ex- <i>Arquebuse</i> , ex- <i>LSSL</i> 9022)	HQ 226	
LUU PHU THO (ex- <i>LSSL</i> 101)	HQ 229	2 Oct 1965
NO THAN (ex- <i>Framee</i> , ex- <i>LSSL</i> 105)	HQ 225	
NGUYEN DUC BONG (ex- <i>LSSL</i> 129)	HQ 231	19 Feb 1966
NGUYEN NGOC LONG (ex- <i>LSSL</i> 96)	HQ 230	8 Dec 1965

Displacement, tons	227 standard; 383 full load
Dimensions, feet	158 x 23.7 x 5.7
Guns	1—3 in; 4—40 mm; 4—20 mm; 4 MG
Main engines	Diesel; 2 shafts; 1 600 bhp = 14 knots
Complement	6 officers, 54 men

Of the *LSSLs* transferred from the USA in 1951 for service in Indo-China, *Arquebuse* was transferred by France to Vietnam in 1955 and *Framee* in 1957. The dates of other transfers of *LSSLs* from USA are shown after names above; these were formerly transferred to Japan by USA; they were renamed after Vietnamese officers who died for their country.



NO THAN 1965, Vietnamese Navy, Official

Landing Ships—continued

5 Ex-U.S. LSIL Type

LOI CONG	(ex-LSIL 9034, ex-US 699)	HQ 330
LONG DAO	(ex-LSIL 9029, ex-US 698)	HQ 327
TAM SBT	(ex-LSIL 9033, ex-US 871)	HQ 331
THAN TIEN	(ex-LSIL 9035, ex-US 702)	HQ 328
THIEN KICH	(ex-LSIL 9038, ex-US 872)	HQ 329

Displacement, tons	227 standard; 383 full load
Dimensions, feet	158 x 22·7 x 5·3
Guns,	1—3 in, 1—40 mm, 2—20 mm; 4 MG; and 4 army mortars (2—3·1 in; 2—60 mm)
Main engines	Diesel; 2 shafts; 1 600 bhp = 14·4 knots
Complement	6 officers, 49 men

Former US ships. 9030-9033 were ceded to France at Bremerton, Washington, on 2 Mar 1951, and 9029 and 9034-39 in 1953 and stationed in Indo China. Similar to preceding class. LSIL 9030 (ex-715) was scrapped in 1955. The above vessels were transferred from France to Vietnam in 1956.



THIEN KICH 1962, Vietnamese Navy, Official

UTILITY LANDING CRAFT

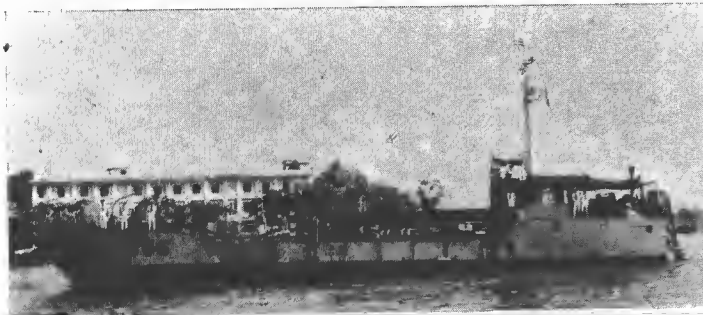
7 Ex-U.S. LCU Type

HQ 533 (ex-LCU 9076) ex-US 1479	HQ 535 (ex-LCU 9086) ex-US 1221
HQ 534 (ex-LCU 9089) ex-US 1480	HQ 537 (ex-LCU 9887) ex-US 1501
	HQ 538 (ex-LCU) ex-US 1594

Displacement, tons	180 light; 360 full load
Dimensions, feet	115 wl, 119 oa x 34 x 6
Guns	2—20 mm AA
Main engines	3 diesels; 3 shafts; 675 bhp = 10 knots

Built in the USA and transferred under MDAP. Acquired in 1954 from French reparations. All LCT (7) type except HQ 535 (LCT (6) type). The landing ships and landing craft from "naval attack divisions" (*Division navale d'assault*) most of which have one LSSL or LSIL as flagships.

DISPOSALS
One LCU (and one LSSL) are reported scrapped or lost, but the names/numbers are not specified.



HQ 536 1962, Vietnamese Navy, Official

HQ 536 (ex-LCU 9074, ex-US 1466)	HQ 539 (ex-LCU, ex-US 1502)
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Displacement, tons	160 light; 320 full load
Dimensions, feet	119 oa x 33 x 5
Guns	2—20 mm AA
Main engines	3 diesels; 3 shafts; 675 bhp = 10 knots

Built under the offshore programme and transferred under the Military Aid Programme.

MINOR LANDING CRAFT

There are also 32 landing craft (*commandement*) of the LCM Type, 10 light monitors, 53 LCVP, and 46 FQM. A total of 150 boats of these types were assigned to the River Force in June 1965.

MOTOR LAUNCH MINESWEEPERS

12 Ex-U.S. MLMS Type

MLMS 150	MLMS 153	MLMS 156	MLMS 159
MLMS 151	MLMS 154	MLMS 157	MLMS 160
MLMS 152	MLMS 155	MLMS 158	MLMS 161

Converted 50 foot motor launches acquired from the United States in 1963.

SUPPORT SHIPS

18 Amphibious Logistic Types

Various landing ships, landing craft and auxiliaries adapted for fleet support.

RIVER ASSAULT CRAFT

227 Control Types

A mixed force of various small vessels, see under minor Landing Craft

AUXILIARY GUNBOATS

500 Junk Types

A Coastal Force of motorised junks was organised with United States assistance. This junk fleet is armed with 50 and 30 cal machine guns. The Junk Force was established on 12 Apr 1960, with 100 junks, 28 groups of junks having been formed by June 1962. Mass production of improved design junks was undertaken to control infiltration of South Vietnam coastal waters by North Vietnamese forces. New junks are fitted with armour plate and fibre glass to protect the wooden hull against marine borers, and have diesels equal to speeds up to 15 knots. In June 1967 there were about 500 junks crewed by nearly 4 000 men. The remaining sail junks were disposed of. The Coastal Force (ex-Junk Force) became part of the Vietnamese Navy, and no longer a para-military organisation in July 1965.

OILERS

2 Ex-U.S. YOG Type

HQ 470 (ex-L'Aulne, ex-US YOG 80)	HQ 471 (ex-YOG 33)
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Displacement, tons	450
Capacity, tons	700 deadweight

HQ 470 is a former US oiler ceded to France on 2 Mar 1950, and transferred from the French Navy to the Vietnamese Navy in 1956, and rated as a regional supply ship. HQ 471 was transferred from the USA to Vietnam in 1963.

SUPPLY VESSELS

2 Trawler Type

HA LONG HQ 452	LONG HAI HQ 453
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Supply vessels of the trawler type taken into national service.

WATER CARRIER

1 Ex-U.S. YW Type

YW 152

Former United States self-propelled water barge transferred under the Military Aid Programme.

TUGS

2 Ex-U.S. YTM Type

YTM 193 (ex-USS <i>Sassacus</i>)	YTM 385 (ex-USS <i>Wannalancet</i>)
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Medium harbour tugs transferred to Vietnam by the USA in Jan 1963. (The large harbour tug USS *Oswegatchie* YTB 515, was transferred to Venezuela and not to Vietnam as originally intended).

11 Ex-U.S. YTL Type

HQ 9500 (ex-YTL 152)	HQ 9502 (TID type)	HQ 9503 (ex-YTL 200)
HQ 9501 (ex-YTL 245)		HQ 9504 (ex-YTL 206)

YTL 203	YTL 423	YTL 446	YTL 451	YTL 455	YTL 590
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Former United States small harbour tugs transferred from the US Navy under the MAP. Nos. 423, 446, 451, 455 and 590 were transferred in Jan 1963.

YUGOSLAVIA

Administration
Assistant Secretary of State for National Defence for the Navy:
Admiral Mate Jerkovic
Commander-in-Chief of the Fleet:
Vice-Admiral Ljubo Truta

Personnel
1967: 27,000 officers and ratings

Diplomatic Representation
Defence Attaché in London:
Colonel Branko Kobali
Assistant Defence Attache (Naval) in London:
Commander Zvonimir D. Kostic
Naval, Military and Air Attaché in Washington:
Colonel Milan Mavric

Strength of the Fleet
4 Submarines
3 Destroyers
3 Frigates
1 Minelayer
19 Patrol Vessels
40 Minesweepers
100 Torpedo Boats
36 Support Ships

Mercantile Marine
Lloyd's Register of Shipping:
353 vessels of 990,846 tons gross

3 - 1 "Sutjeska" Class

SUTJESKA	NERETVA	ULJANIK
Displacement, tons	550 standard; 700 surface	945 submerged
Length, feet (metres)	197 (56.0) pp	
Beam, feet (metres)	21.3 (6.5)	
Draught, feet (metres)	16 (4.9)	
Torpedo tubes	6—21 in (533 mm)	
Main engines	Diesels; electric motors	
	1 800 hp	
Speed, knots	14 on surface; 9 submerged	
Radius, miles	4 800 at 8 knots	
Complement	38	

Sutjeska was launched on 28 Sep 1958 at Uljanik Shipyard, Pula. The first submarine to be built in a Yugoslav yard. Commissioned on 16 Sep 1960.

PENNANT NUMBERS. Numbered in an "810" series, see 811 and 812 in photographs.

DISPOSAL
The old modified "L" type submarine *Tara* (ex-*Nebojsa*) was scrapped in 1958.

SAVA (ex-*Nautilo*) Pennant No. 802

Displacement, tons	747 standard; 905 surface; 1 068 submerged
Length, feet (metres)	207.1 (63.1)
Beam, feet (metres)	22.8 (6.9)
Draught, feet (metres)	16 (4.9)
Torpedo tubes	6—21 in (533 mm)
Main engines	Diesels; electric motors 2 400 hp
Speed, knots	16 on surface; 8 submerged
Complement	55

Formerly Italian. Built by CRDA, Monfalcone. Laid down on 3 Jan 1942. Launched on 20 Mar 1943. Completed on 26 July 1943. Sunk on 9 Jan 1944. Salvaged. Reconstructed with new conning tower



ULJANIK 1966, Yugoslavian Navy, Official



SUTJESKA 1963, Yugoslavian Navy, Official



SAVA 1966, Dr Giorgio Arra

DESTROYERS (Razarc)

Name	No.	Builders	Laid down	Launched	Completed
KOTOR (ex- <i>Kempenfelt</i> , ex- <i>Valentine</i> ; Leader)	R 21	John Brown & Co Ltd, Clydebank	24 June 1942	9 May 1943	25 Oct 1943
PULA (ex- <i>Wager</i>)	R 22	John Brown & Co Ltd, Clydebank	20 Nov 1942	1 Nov 1943	14 Apr 1944

2 Ex-British "W" Class

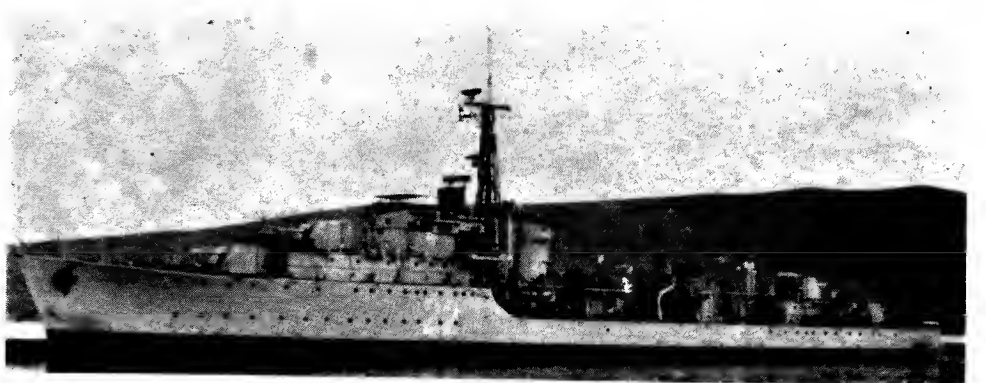
Displacement, tons	1 730 standard; 2 525 full load
Length, feet (metres)	339.5 (103.5) pp, 362.8 (000.0) oa
Beam, feet (metres)	35.7 (10.9)
Draught, feet (metres)	17 (5.2)
Guns, surface	4—4.7 in (120 mm)
Guns, AA	1—40 mm Kotor; 3—40 mm Pula
A/S	4 DCT
Torpedo tubes	8—21 in (533 mm)
Boilers	2 Admiralty 3-drum
Main engines	Parsons geared turbines
	40 000 shp
Speed, knots	36.75 designed; 31.25 sea speed
Radius, miles	2 800 at 20 knots
Oil fuel (tons)	580
Complement	186

Former British destroyers of the "W" class. Purchased during 1956 and towed to Yugoslavia in Oct 1956 to be refitted in a northern Yugoslavian shipyard. *Kotor* was re-commissioned on 10 Sep 1959 and *Pula* by the end of 1959.

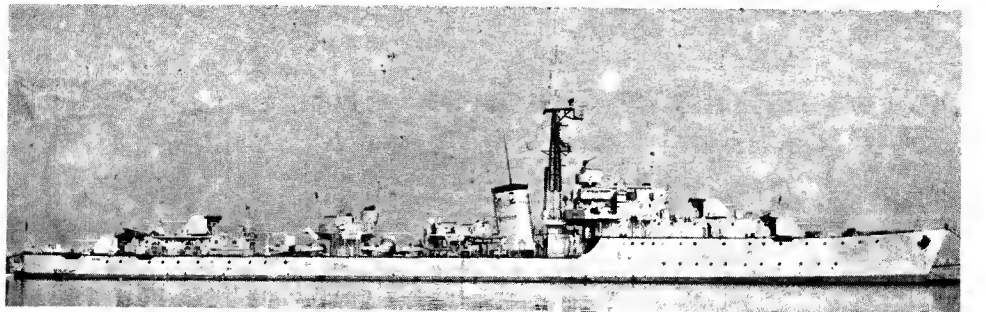
CLASS. Sister ships of *Wessex*, renamed *Jan van Riebeeck* and *Whelp*, renamed *Simon van der Stel*, in South African Navy, and original sister ships of *Wakeful*, *Whirlwind* and *Wizard* in the British Navy, and *Wrangler* in the South African Navy, converted to frigates, see earlier pages.

APPEARANCE. One director on bridge not so large as in later classes. Tall foremast in both. Single Bofors mounting high up abaft funnel in superfiring position.

PHOTOGRAPHS. A starboard view of *Pula* appears in the 1957-58 edition, and another photograph of *Kotor* in the 1957-58 to 1961-62 editions.



PULA 1962, Yugoslavian Navy, Official



KOTOR 1966, Yugoslavian Navy, Official

Destroyers—continued

	Name	No.	Builders	Laid down	Launched	Completed
SPLIT (ex- <i>Spalato</i> , ex- <i>Split</i>)		11	Brodogradiliste "3 Maj", Rijeka	July 1939	1940	4 July 1958
Displacement, tons	2 400 standard; 3 000 full load					
Length, feet (<i>metres</i>)	376.3 (114.7)					
Beam, feet (<i>metres</i>)	36.5 (11.1)					
Draught, feet (<i>metres</i>)	12.3 (3.8)					
Guns, surface	4—5 in (127 mm)					
Guns, AA	12—40 mm					
A/S	2 Squids, 6 DCT, 2 DCR					
Torpedo tubes	5—21 in (533 mm)					
Boilers	2					
Main engines	Geared turbines 50 000 shp; 2 shafts					
Speed, knots	31.5					
Oil fuel (tons)	590					

The original ship was laid down by Chantiers de Loire, Nantes, in 1939 at Split Shipyard. Launched in 1940. Carried out extensive trials in 1958. Ready for operational service in 1959. The original design provided for an armament of 5—5 5 inch guns, 10—40 mm AA guns and 6—21 7 inch torpedo tubes (tripled), but the plans were subsequently modified. Mine capacity, 40.



SPLIT

Yugoslavian Navy, Official

FAST FRIGATES (Light Destroyer Type)

<i>Name</i>	<i>No.</i>	<i>Builders</i>	<i>Laid down</i>	<i>Launched</i>	<i>Completed</i>
BIOKOVO (ex- <i>Aliseo</i>)	RE 52	Navalmecanica, Castellammare	16 Sep 1941	20 Sep 1942	28 Feb 1943
TRIGLAV (ex- <i>Indomito</i>)	RE 51	Cantiere del Tirreno, Riva Trigoso	10 Jan 1942	6 July 1943	4 Aug 1941

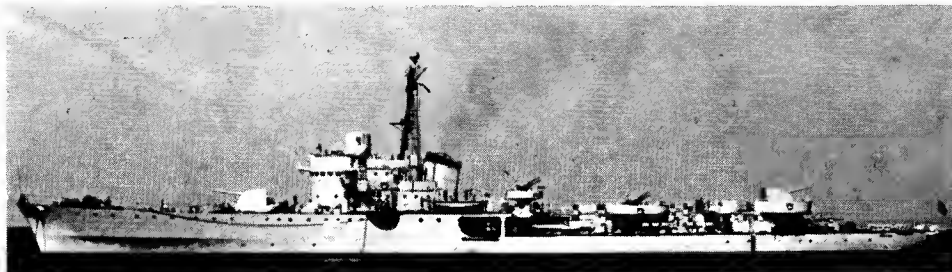
2 "Triglav" Class

Displacement, tons	1 204 standard ; 1 709 full load
Length, feet (<i>metres</i>)	270·5 (82·5) pp; 293·0 (89·3) oa
Beam, feet (<i>metres</i>)	32·5 (9·9)
Draught, feet (<i>metres</i>)	9·5 (2·9)
Guns, dual purpose	3 9 in (100 mm) 47 cal. 8iokovo. 2 Triglav. 3
Guns, AA	20 mm 8iokovo 10 Triglav. 11
A/S	4 DCT
Torpedo tubes	4—17·7 in (450 mm) 2 twin
Boilers	2—3-drum type
Main engines	2 Tosi geared turbines 16 000 shp. 2 shafts
Speed, knots	26
Radius, miles	3 500 at 15 knots
Oil fuel (tons)	430
Complement	175

Ex-Italian large oceangoing torpedo boats or escort
destroyers.

DISPOSAL.

The former Italian oceangoing torpedo boat or small destroyer *Durmitor* (ex-*Arrete*), the only survivor of her class, afterwards reclassified as a fast frigate, was officially removed from the active list in 1963.



BLOKOVO

Yugoslavian Navy, Official



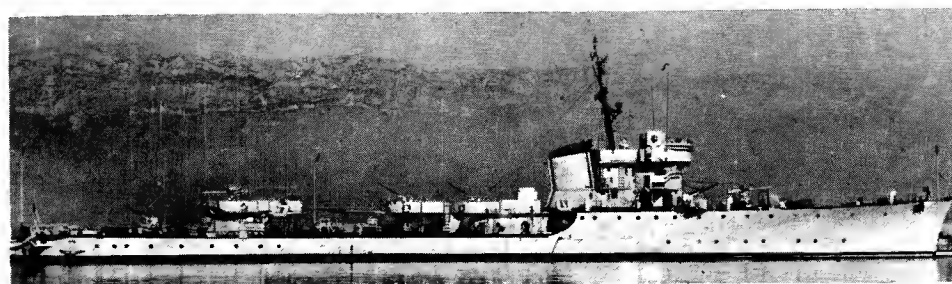
TRIGLAV

Yugoslavian Navy, Official

<i>Name</i>	<i>No.</i>	<i>Builders</i>	<i>Laid down</i>	<i>Launched</i>	<i>Completed</i>
UCKA (ex-Balestra)	RE 54	CN Quarnaro, Fiume	5 Sep 1942	1943	1949

Displacement, tons	797 standard; 1 033 full load
Length, feet (<i>metres</i>)	265 8 (81 0)
Beam, feet (<i>metres</i>)	27 3 (8 3)
Draught, feet (<i>metres</i>)	9 0 (2 7)
Guns, surface	2—3 9 in (100 mm) 47 cal
Guns, AA	10—20 mm 70 cal
Torpedo tubes	6—17 7 in (450 mm) 2 triple
Boilers	2—3-drum type
Main engines	2 Tosi geared turbines 22 000 shp; 2 shafts
Speed, knots	31 5
Radius, miles	1 800 at 15 knots
Oil fuel (tons)	200
Complement	150

Ex-Italian oceangoing torpedo boat or small destroyer damaged by bombs on 20 Feb 1945, but completed by Yugoslavia. *Ucka* means the Monte Maggiore near Abbazia.



UCKA

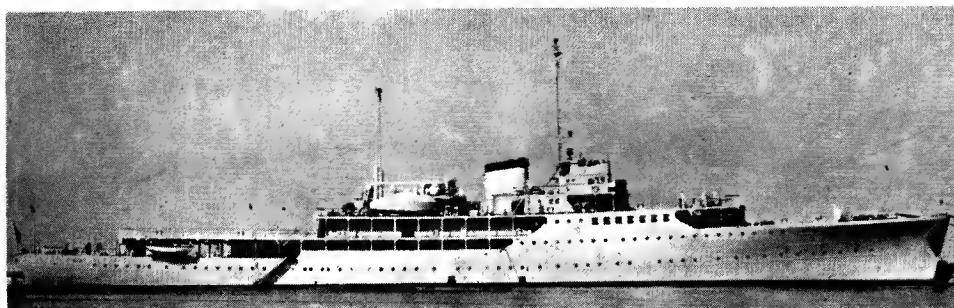
1966, Yugoslavian Navy, Official

MINELAYER Training Ship (*Skolski Brodovi*)

GALEB (ex-Kuchuck, ex-Ramb III) M 11

Displacement, tons	5 182
Measurement, tons	3 667 gross
Length, feet (<i>metres</i>)	385 (117.3)
Beam, feet (<i>metres</i>)	51 (15.2)
Draught, feet (<i>metres</i>)	18 (5.5)
Guns, AA	6—40 mm
Main engines	2 diesels; 2 shafts
Speed, knots	17

Ex-Italian. Launched in 1938. Refloated and completed in 1952. Now training ship. Also Presidential Yacht. Former armament was four 3.5 inch, four 40 mm and 24—20 mm (six quadruple) guns.



GALEB

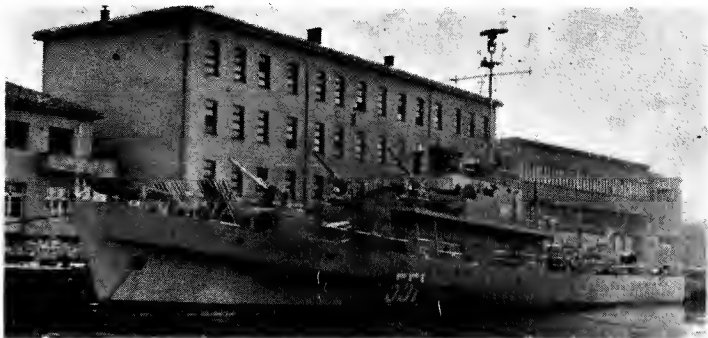
1966, Yugoslavian Navy, Official

PATROL VESSELS

MORNAR

Displacement, tons	330 standard; 400 full load
Dimensions, feet	170 x 23 x 6.5
Guns	2—3 in; 2—40 mm AA; 2—20 mm AA
A/S weapons	2 Hedgehogs; Mark 22
Main engines	4 diesels; 3 240 bhp = 18 knots
Radius, miles	3 000 at 12 knots
Complement	60

Completed on 10 Sep 1959. Design is basically similar to that of P8R 581.

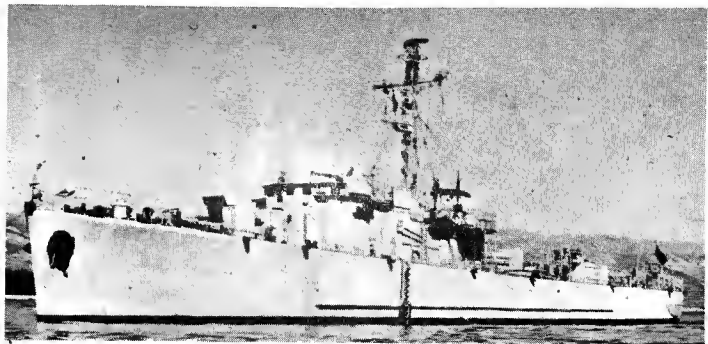


MORNAR 1962, Yugoslavian Navy, Official

PBR 581 (ex-P6)

Displacement, tons	325 standard; 400 full load
Dimensions, feet	170 pp x 23 x 6.5
Guns	2—40 mm AA; 2—20 mm AA
A/S weapons	1 Hedgehog; 4 DCT; 2 DC racks
Main engines	4 Pielstick SEMT diesels; 3 240 bhp = 18.7 knots
Radius, miles	3 000 at 12 knots; 2 000 at 15 knots
Complement	62

USA offshore procurement. Ordered in France. Built by F. C. Mediterranea (Graville). Launched on 1 June 1954. Transferred to Yugoslavia in 1956.



PBR 581 1967, Yugoslavian Navy, Official

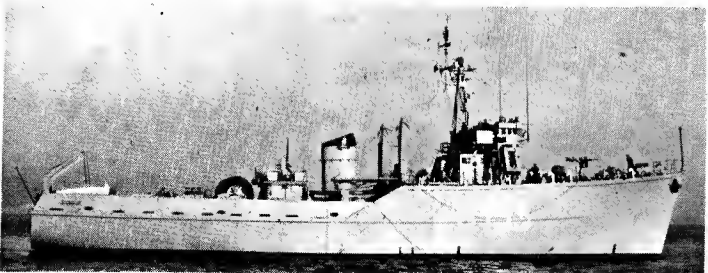
COASTAL MINESWEEPERS

HRABRI M 151 (ex-D 25)	SMELI M 152 (ex-D 26)
SLOBODNI M 153 (ex-D 27)	SNAZNI M 154

Displacement, tons	365 standard; 424 full load
Dimensions, feet	140 pp; 152 oa x 28 x 8.2
Guns	1—40 mm AA; 1—20 mm AA
Main engines	SIGMA free piston generators; 2 shafts. 2 000 bhp = 15 knots
Oil fuel, tons	48
Radius, miles	3 000 at 15 knots
Complement	40

First three were built in France by A Normand as United States "Off-shore" orders, launched on 27 Feb 1956, 26 May 1956 and 26 June 1956, respectively, and allocated to the Yugoslav Navy at Cherbourg in Sep 1957. Snazni was built in Yugoslavia in 1960.

A photograph of Smeli appears in the 1958:59 to 1965-66 editions.



SLOBODNI 1966, Yugoslavian Navy, Official

MOTOR TORPEDO BOATS (Torpedni Camci)

100 Type "108"

102	115	120	125	157	164	170
103	116	122	126	159	165	174
108	119	124	127	162	167	199
						201

Displacement, tons	55 standard; 60 full load
Dimensions, feet	69 pp; 78 oa x 21.3 x 7.8
Guns	1—40 mm AA; 4—12.7 mm MG
Tubes	2
Main engines	3 Packard petrol motors; 3 shafts; 5 000 bhp = 40 knots (36 knots sea speed)
Complement	14

The total number of motor torpedo boats is reported to have reached 100. Under future programmes it is planned to raise the total to 110.

TRANSFERS. Two of this class were transferred to Ethiopia in 1960 and renamed Barracuda P 22 and Shark P 21.



MT8 174 1962, Yugoslavian Navy, Official



MT8 119 Yugoslavian Navy, Official

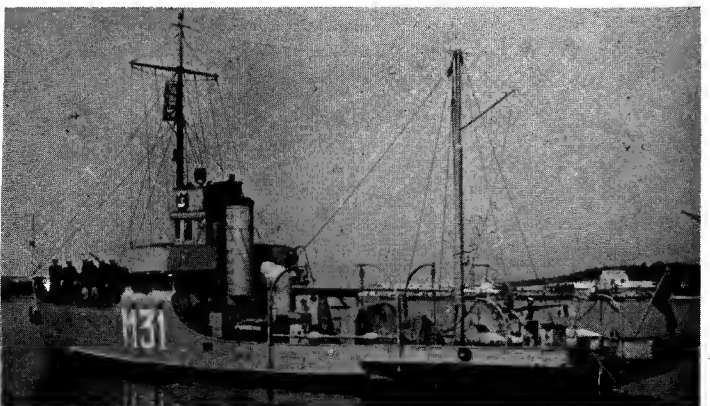
MINING TENDERS (Tenderi minopolagaci)

3 Yarrow Class

M 31 (ex-Meljine)	M 32	M 33 (ex-Mljet)
-------------------	------	-----------------

Displacement, tons	130 standard
Dimensions, feet	174 x 26.2 x 13
Guns	1—47 mm
Main engines	Triple expansion; 2 shafts; 280 hp = 9 knots
Complement	30

Built by Yarrow's Adriatic Yard, Kraljevica. Launched in 1931. While in Italian hands M 31 and M 33 were named Solto and Meleda, respectively.



M 31 Yugoslavian Navy, Official

RIVER PATROL VESSEL

KRAJINA (ex-Dragar)

Displacement, tons	250
Dimensions, feet	164 x 26.2 x 3.8
Main engines	480 hp = 10 knots

Launched in 1923. This vessel formerly served as the Royal Yacht on the Danube.

PATROL BOATS

“Kraljevica” Class Submarine Chasers
16 PBR 501-508 and 509-516 Types

PBR 509	PBR 511	PBR 513	PBR 515
PBR 510	PBR 512	PBR 514	PBR 516

This second batch of submarine chasers launched in 1957-59 are an improvement on the PBR 501-508 series below, but of similar basic particulars.

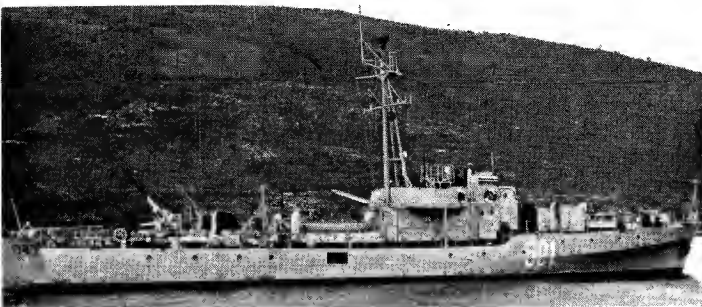


PBR 512 1959, Yugoslav Navy, Official

PBR 501	PBR 503	PBR 505	PBR 507
PBR 502	PBR 504	PBR 506	PBR 508

Displacement, tons	190 standard; 245 full load
Dimensions, feet	134.5 x 20.7 x 7
Guns	1—3 in; 1—40 mm AA; 4—20 mm AA
A/S weapons	DC
Main engines	Diesel; 2 shafts; 3 300 bhp = 20 knots
Oil fuel, tons	15
Radius, miles	1 500 at 12 knots
Complement	54

These submarine chasers of the “500” class were launched from 1953 to 1956.



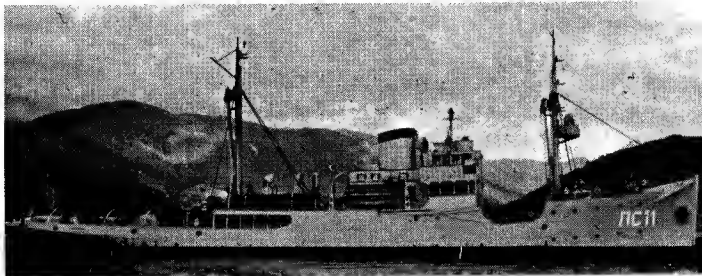
PBR 501 1966, Yugoslav Navy, Official

SALVAGE VESSEL (*Brod za Spasavanje*)

PS II SPASILAC

Displacement, tons	740
Dimensions, feet	174 x 26.2 x 13
Main engines	Triple expansion; 2 000 hp = 15 knots

Built by Howaldt, Kiel. Launched in 1929. Name means “Salvador”. While in Italian hands she was called *Intangible*.



SPASILAC 1966, Yugoslav Navy, Official

YACHT (*Jahta*)

ISTRANKA (*ex-Vilax-Dalmata*)

Displacement, tons	230
Main engines	325 hp = 12 knots

Istranka means Nymph. Named *Fata* whilst in Italian hands during 1941-45.

WATER CARRIERS (*Vodonosci*)

PV 6	PV 11	PV 12
------	-------	-------

There are 8 water carriers of various types. Also PT 12 and PO 54.

INSHORE MINESWEEPERS (*Minolovci*)

12 Type 101

M 103	M 106	M 111	M 113	M 115	M 120
M 105	M 109	M 112	M 114	M 116	M 140

Displacement, tons	90 standard; 95 full load
Dimensions, feet	82 x 19.5 x 6.2
Guns	1—40 mm; 1—20 mm
Main engines	Diesel; 135-175 bhp = 12 knots

Built during 1950-56 in Yugoslav shipyards. Vary in detail. Some used for patrol. M 101, M 102, M 104, M 107, M 108 and M 110 were scrapped in 1966.



M 109 Yugoslav Navy, Official

4 U.S. MSI Type

MSI 98	MSI 99	MSI 100	MSI 101
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The above are the US Navy hull numbers of boats building for transfer to Yugoslavia under the Military Aid Programme.

6 Ex-Italian Type 301

ML 301 (ex-RD 6)	ML 303 (ex-RD 21)	ML 305 (ex-RD 27)
ML 302 (ex-RD 16)	ML 304 (ex-RD 25)	ML 306 (ex-RD 28)

Displacement, tons	151 to 156
Dimensions, feet	116 x 19.2 x 6
Guns	1—3 in AA
Main engines	Triple expansion; 750 ihp = 10 knots

Formerly Italian. Launched in 1917-19. ML 307 (ex-RD 29) was scrapped in 1955. A photograph of M 301 appears in the 1955-56 to 1965-66 editions.

RIVER MINESWEEPERS

14 RML 300 Type

M 301	M 303	M 305	M 307	M 309	M 311	M 313
M 302	M 304	M 306	M 308	M 310	M 312	M 314

Displacement, tons	38
Guns	1—20 mm
Main engines	Speed = 12 knots

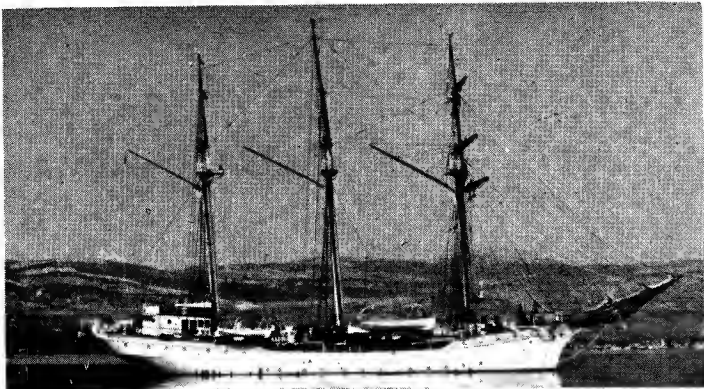
All launched in 1951-53. A photograph of M 313 appears in the 1956-57 and 1957-58 editions.

SAIL TRAINING SHIP

JADRAN

Displacement, tons	720
Dimensions, feet	190 x 29.2 x 13.8
Sail area, sq ft	8 600
Main engines	1 Linke-Hofman Diesel; 375 hp = 8 knots

Launched in 1932. Accommodation for 150 Cadets. Name means “Adriatic”. While in Italian hands she was named *Marco Polo*.



JADRAN 1966, Yugoslav Navy, Official

DESPATCH VESSEL

JADRANKA (ex-Bjeli Orao)

Displacement, tons 567 standard; 660 full load
 Dimensions, feet 197 pp; 213.2 oa × 26.5 × 9.3
 Guns, 2—40 mm AA; 2 MG
 Main engines 2 Sulzer diesels; 1 900 bhp = 18 knots

Built by C. R. dell'Adriatico, San Marco, Trieste; launched on 3 June 1939. Was used as Admiralty yacht and yacht of Marshall Tito. While in Italian hands was named *Alba* for some days only, then *Zagabria*.



JADRANKA

1966, Dr Giorgio Arra

LANDING CRAFT

D 230

Displacement, tons circa 500

Capable of carrying at least two, possibly three of the heaviest tanks. Unlike other tank landing craft in that the lower part of the stern drops to form a ramp down which the tanks go ashore, underneath the prow, which is rigid.



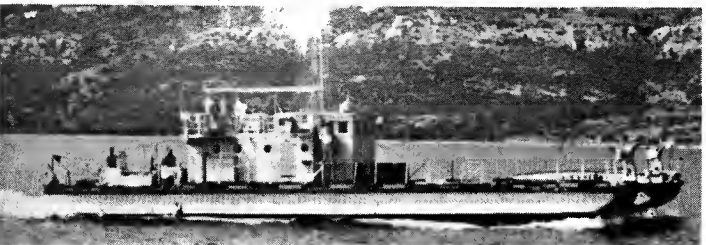
D 230

courtesy B. Hinchcliffe, Esq

Catamaran Type

Displacement, tons circa 50

A smaller craft consisting of two pontoons some feet apart, secured to each other by cross-girders on which stand the bridge and cabins, etc. This vessel appears to be capable of carrying one medium tank, to be put ashore by two bridge members which can be seen quite clearly, folded back on the deck.



Catamaran type

courtesy B. Hinchcliffe, Esq

DTK 221

Displacement, tons 410
 Dimensions, feet 144.3 × 19.7 × 7
 Guns 1—20 mm AA; 2—12.7 mm
 Main engines Speed = 10 knots
 Complement 15



D 221

Yugoslavian Navy, Official

D 206 (ex-MZ 713)

Displacement, tons 225 and 239
 Guns 1—20 mm AA; 2 MG AA
 Main engines Speed = 11 knots

Ex-Italian landing craft. Launched in 1942. Capable of carrying three tanks. A photograph of D 219 appears in the 1959-60 to 1965-66 editions.

D 203

Displacement, tons 220
 Guns 1—3.4 in (88 mm); 2—20 mm AA
 Main engines Speed = 10 knots

Ex-German landing craft. Two landing craft were launched in 1956.

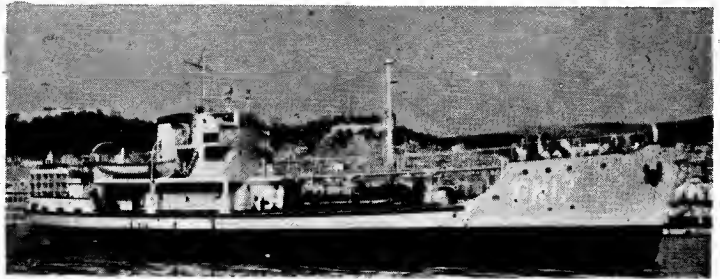
D 204

OILERS

PN 17

Displacement, tons 420 standard; 650 full load
 Dimensions, feet 141.5 × 22.8 × 13.5
 Main engines 300 bhp = 7 knots

There are also the small oilers *Kit* and *Uljesura*, displacement 250 tons.



PN 17

1962, Yugoslavian Navy, Official

4 PN 13 Type

PN 13 (ex-Lovcer)

Displacement, tons 560 to 695
 Main engines Speed = 8.5 knots

PV 13 (ex-Lovcer) was launched in 1932. For fleet servicing and freighting.

TRANSPORTS

2 PT 71 Type

Displacement, tons 310 standard; 428 full load
 Dimensions, feet 141.5 × 22.2 × 16
 Main engines 300 bhp = 7 knots

The transport *Tunj* PT 21 (ex-Krk, ex-Kt. 6) was removed from the list in 1963.



PT 71

1966, Yugoslavian Navy, Official

TUGS (Remorkeri)

PR 52 (ex-San Remo)

Displacement, tons 170
 Main engines 350 hp = 9 knots

Former Italian tug and multi-purpose vessel. Launched in 1937.

PR 58 (ex-Molara)

Displacement, tons 118
 Main engines 250 hp = 8 knots

Former Italian tug. Launched in 1937, now used as general transport and towing vessel.

PR 51 (ex-Porto Conte)

Displacement, tons 226

Former Italian tug. Launched in 1936. A photograph appears in the 1951-52 to 1957-58 editions.

PR 55 (ex-Snazi)

Displacement, tons 100
 Main engines 300 hp = 10 knots

Launched in 1917. Name means "Strong". The Italian name was *Resistance*.

PR 54 (ex-Ustrajni)

Displacement, tons 160
 Main engines 250 hp = 9 knots

Launched in 1917. Name means "Durable". The Italian name was *Duratero*.

LR II (ex-Basiluzzo)

Displacement, tons 108
 Main engines 130 hp = 8 knots

Former Italian tug. Launched in 1915. There is also the very old tug PP 1.

ZAMBIA

BASTION L 4040

Tank landing craft of the LCT (8) type purchased from Great Britain on 15 Sep 1966. See particulars in United Kingdom section, page 321. Personnel are being recruited for an expanded Zambia Defence Force.

TABLE SHOWING THE NUMERICAL STRENGTH OF EACH COUNTRY

	Larga Aircraft Carriers	Light Aircraft Carriers	Escort Carriers, Heli- copter Carriers, Com- mando Carriers	Command Ships, Communi- cations Ships, Amphib- ious Force Flag- ships	Nuclear Powered Sub- marines	Conven- tionally Powered Sub- marines	Cruisers	Leadars, Large Destroy- ers, Frigates (DLG)	Destroy- ers	Destroy- er Escorts, Frigates, Escorts (and APD)	Corvettes (includ- ing PCE)	Patrol Vessels, Sub- marine Chasers (PC)	Motor Torpedo Boats, Motor Gun- boats, Fast Patrol Boats	Fleet Mine- layers, Fast Mine- layers, Mine Support Ships	Coastal Mine- layers
ARGENTINA		1				2	3		9	4	3	B	1		
AUSTRALIA		1	1			2		3	6	10					
BELGIUM											2				
BRAZIL		1				4	2		9		10				
BULGARIA						2				2		B	14		
BURMA										1	2	5	5		
CANADA		1				4				23					
CEYLON										1					
CHILE						2	2		4	1	2	2	4		
CHINA						34			4	15		28	226		
COLOMBIA									3	2					
CUBA										4	2	14	42		
DENMARK						4				6	4		16	4	4
DOMINICAN R									2	3	5	7			
ECUADOR										3	2				
EGYPT						13			6	3	3		62		
FINLAND										3		4	13		2
FRANCE		3	1			23	2	2	18	2B		14			
GERMANY (E)										4		41	52		
GERMANY (W)						12			10	24	7		47	3	
GREECE						3			8	4		13			2
INDIA		1					2		3	14					
INDONESIA						12	1		7	11	3	12	64		
IRAN									1	1	3				
IRAQ												3	12		
ISRAEL						4			2	1		1	12		
ITALY						7	3	4	4	12	25	7	14		
JAPAN						7			24	1B		20	10		2
KOREA (N)												15	21		
KOREA (S)									1	B	9	6	2		
MALAYSIA										1			4		
MEXICO										8	21	1			
NETHERLANDS		1				6	2		12	8	12				
NEW ZEALAND										5		1			
NORWAY						15				5		2	26		5
PAKISTAN						1	1		5	2					
PARAGUAY															
PERU						4	2		2	3	2				
PHILIPPINES											6	6			
POLAND						11			5			8	52		
PORTUGAL						3			1	12	1	14			
RUMANIA												3	8		
SOUTH AFRICA									2	6					
SPAIN			1			8	1		18	B	6	2	3	6	
SWEDEN						19	1		B	10		2	43	1	10
TAIWAN									5	13	5	23	48		1
THAILAND										5		14			2
TURKEY						10			10		9	6		1	6
UNITED KINGDOM	3	2	2		5	43	3	6	16	71			7	1	6
URUGUAY										3		4			
USA	34	2	20	9	80	127	37	33	345	284	10	40	10	14	
USSR					50	350	20		120	100		300	450		
VENEZUELA						1			3	6		12			
VIETNAM											6	2	14		
YUGOSLAVIA						4			3	3		2	100	1	3

Note—Figures include vessels in reserve, but not ship under construction

ALL THE WORLD'S FIGHTING SHIPS

<i>Ocean Mine- sweepers Fleet Mine- sweepers</i>	<i>Coastal Mine- sweepers Mine Hunters</i>	<i>Inshore Mine- sweepers Mine- sweeping Boats</i>	<i>Motor Leun- ches, Motor Patrol Craft, River Gun- boats</i>	<i>Landing Ships</i>	<i>Landing Craft</i>	<i>Boom Defence Vessels, Net- layers</i>	<i>Survey Ships</i>	<i>Depot Ships, Repair Ships, Main- tenance Ships</i>	<i>Trans- ports</i>	<i>Supply Ships</i>	<i>Oilers</i>	<i>Training Ships</i>	<i>Tugs</i>	<i>Misce- laneous</i>	
4	6			7	3		3		5		4	2	10	2	ARGENTINA
	6	2	3			3	2				1		3	9	AUSTRALIA
7	23	16	7					3					1	8	BELGIUM
	4		11				6	2	4		10	1	12	2	BRAZIL
2	4	24			16							2	1	2	BULGARIA
1			34		8				1					2	BURMA
	6		3			5	6	3		3	2		27	70	CANADA
			9										1	1	CEYLON
				3	3		1		2		1	1	12	3	CHILE
12	28		74	31	28	6	2	1	1	8	5	2	11	375	CHINA
			22				1		6		3		13	4	COLOMBIA
			27										1	6	CUBA
	8	16	13		10		1	3			2			7	DENMARK
			7	1	2						2		5	2	DOMINICAN R
			8	2									2	2	ECUADOR
6		2			18				1					2	EGYPT
		5	14						9				3	9	FINLAND
15	71	15	13	9	10	12	9	10	10	16	10	4	20	30	FRANCE
22		87	93		20		3				3	2	7	30	GERMANY (E)
	24	45	24	6	4		8	16		6	10	3	18	20	GERMANY (W)
5	14		5	15	8	1	2	2			7		14	10	GREECE
	4	2	13	1	1		4	1			3		1	10	INDIA
6	15		82	11	6		2	3	4		4	2	5	5	INDONESIA
	4	2	24		3			1			2		1	2	IRAN
			4										1	2	IRAQ
			5		3									2	ISRAEL
4	37	20		1	23	2	2	1	5		2	4	26	90	ITALY
	41	6	32	4	6			3			2	10	3	160	JAPAN
10		20	3											70	KOREA (N)
	11	1		20				1	1	6	4		2	6	KOREA (S)
	6	6	14		1			1						2	MALAYSIA
			8				1		1		2			1	MEXICO
	46	16	5		7	1	3	1		3	1	3	7	20	NETHERLANDS
4			12				1			1				2	NEW ZEALAND
	10						1	2				1		9	NORWAY
	8		6				1				2		4	3	PAKISTAN
			8											1	PARAGUAY
	2		16	4					3		4		2	3	PERU
	2		20	6			1	1	1		1		4	5	PHILIPPINES
18	4		17		17		1				3	2		9	POLAND
4	12		35		4		6	1			2	1		11	PORTUGAL
4		22						1				3		2	RUMANIA
1	10		10			1	1				1		1	2	SOUTH AFRICA
13	12		18	8		1	3		3		4	1	10	20	SPAIN
1	18	19	24		12		12	2		1	3	2		17	SWEDEN
5	8		50	45	38		2	3	6		5		5	60	TAIWAN
1	4		8	5	8		1		1		4	1	5	3	THAILAND
9	12		30			5		2			4	1	2	5	TURKEY
	75	25	7	8	30	28	12	14		19	38		80	260	UNITED KINGDOM
							1				1			2	URUGUAY
100	30	46	264	163	83	3	26	69	40	125	75	2	250	440*	*USA
170	150	30	120	124	106	18	55	50	25	20	50	20	40	500	†USSR
			12	4			3	1	1				2	3	VENEZUELA
	3			10	23					1	2		14	10	VIETNAM
	4	30	17		7				2		6	1	8	20	YUGOSLAVIA

* Includes Coastguard

† Round figures are estimated

ARGENTINA—Destroyers

Page 5

Reported Argentina may not accept USS *Charles J. Badger* and USS *Hickox* which were originally planned for transfer but are no longer scheduled.

AUSTRALIA—Submarines

Page 12.

Australian submarine lying in Australian waters for the first time in 36 years when HMAS **OXLEY** secured in Moreton Bay, Brisbane, after 9-week delivery voyage from United Kingdom. The remaining three submarines of the British "Oberon" class, **ONSLOW**, **OTWAY** and **OVENS**, will be delivered in the next three years. All four will be based at Neutral Bay, Sydney.

HMAS *Platypus*, new submarine base in Sydney Harbour, opened on 18 Aug 1967, coinciding with the arrival of the first of the four new submarines, and the re-birth of the Australian Submarine Service.

Inshore Minesweepers

Page 18.

HMS *Popham* renamed **OTTER** and *Wintringham* renamed **SEAL**. Attached to Diving School, Sydney, as Tenders.

Patrol Craft

Page 18.

ATTACK launched 8 Apr. 1967 by Evans Deakin, Brisbane. **AITAPE** launched May 1967 by Ealkers, Maryborough.

Supply Ship

Page 18.

JEPATIR, ex-merchant ship, will continue in RAN as a stores and ammunition supply ship.

BELGIUM—Support Ships

Page 20.

A 961 launched on 8 Apr 1967 and named **ZINNIA**

CEYLON—Patrol Boats

Page 48.

Twelve more patrol boats similar to those recently completed for the Royal Ceylon Navy ordered from Vosper Thornycroft (Far East) Ltd, Singapore Shipyard (announced 20 July 1967).

FINLAND—Corvettes

Page 79.

Two corvettes or gunboats being built by Wärtsilä-yhtymä Oy Shipyard, Helsinki, for the Finnish Navy, to be fitted with fin stabiliser equipment manufactured by Vosper Thornycroft Hydraulic Power Division (announced 5 July 1967). Expected that the ships will be complete and ready for trials by the time the northern Baltic is free from ice in the spring of 1968. Displacement 800 tons. CODOG (combined diesel or gas) turbine propulsion machinery (Rolls Royce Olympus gas turbines).

FRANCE—Submarines

Page 89.

Proposed name for third nuclear powered ballistic missile submarine: **LE FORMIDABLE**.

**UNITED KINGDOM
New Frigate Designs**

Vosper Thornycroft Mark 5

Basic design which in modified form has been adapted as fast destroyer type for Imperial Iranian Navy. Displacement 1 200 tons (half fuel), length 310 ft oa, armament load 100 tons. Twin screw CODOG machinery with one Rolls Royce Olympus gas turbine and one 16-cyl. Paxman diesel on each shaft. Max speed on turbines 40 knots, under diesel power 18 knots.

Vosper Thornycroft Mark 7.

Announced on 12 July 1967. Developed from Mark 5. Displacement 1 475 tons (half fuel), length 333 ft oa, larger armament load. Same power plant giving 37.5 knots on turbines, 17 knots on diesels. Suggested might be acceptable by the Royal Navy as the small frigates being planned to succeed the "Leander" class.

New Minesweeper Design

Official artist's impression of minesweeper design of the future.

UNITED STATES—Battleship

Page 354.

NEW JERSEY decommissioned in 1957 and laid up in reserve ever since, was broken out of her mothball nest in June 1967 for activation feasibility studies, shifted to another berth in early August 1967 in preparation for her being reactivated, and is to be recommissioned as a monitor for bombardment duty off North Vietnam. Expected to be ready by June 1968. Cost of rehabilitation officially estimated as \$38 000 000. To be manned by 70 officers and 1 400 enlisted personnel, about half her designed full war complement.

U.S.S.R.—Submarines

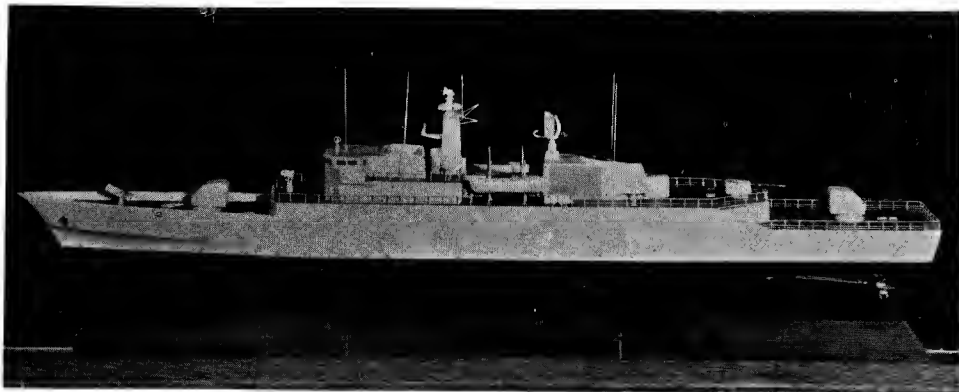
Page 450.

Fifty nuclear powered submarines operational by end of 1976.

Guided Missile Type

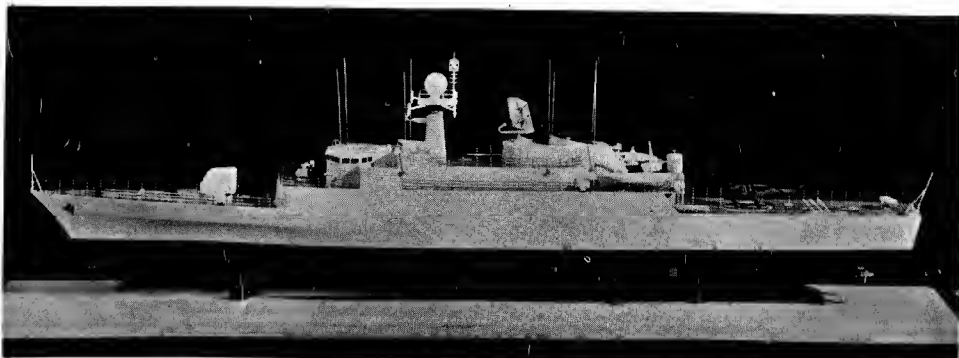
Page 451.

See photograph of "W" class guided missile armed submarine, one of a number described as "submarine rocket carriers".

ADDENDA

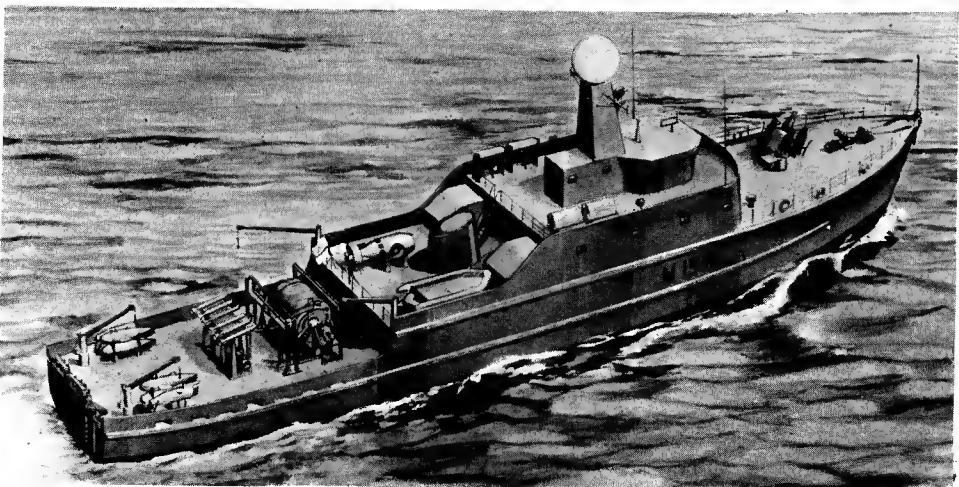
VOSPER MARK 7 FRIGATE model

1967, Vosper Thornycroft Group



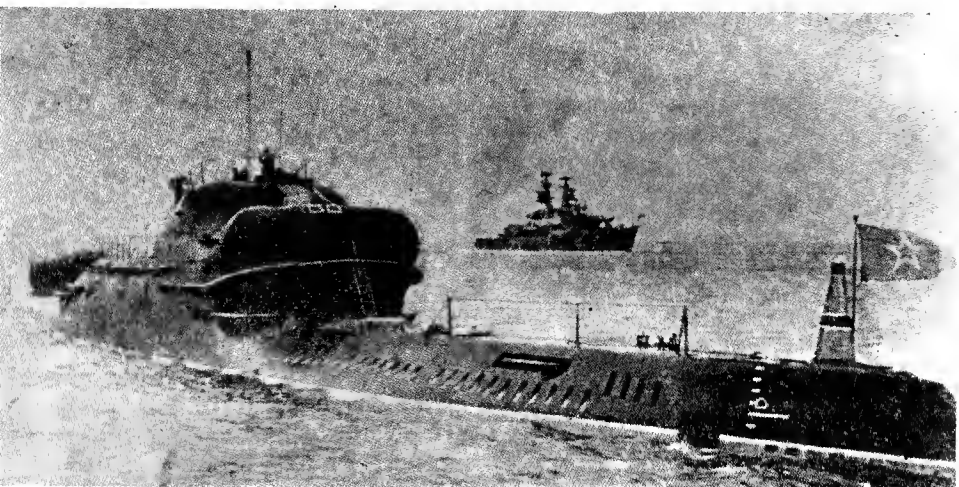
VOSPER MARK 5 FRIGATE model

1967, Vosper Thornycroft Group



MINESWEEPER DESIGN of the future, artist's impression

1967, Official



"W" CLASS GUIDED MISSILE SUBMARINE

1967

NAVAL AIRCRAFT

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488 SHIP-BORNE AIRCRAFT

Br 1050 ALIZE Breguet (France)

Carrier-borne 3-seat anti-submarine (ASW) aircraft

Max. speed at S/L	400 knots
Max. speed at 10 000 ft (3 050 m)	450 knots
Patrol speed	210-320 knots
Service ceiling	26 250 ft (8 000 m)
Normal range	1 350 n. miles
Normal endurance	4 hr 30 min
Endurance, aux. tanks	7 hr 40 min
Armament	Torpedo or depth charges in weapons bay; depth charges, rockets or Nord SS.11 missiles under wings
Max. T-O weight	18 100 lb (8 200 kg)
Wing span	51 ft 2 in (15.60 m)
Width folded	23 ft 0 in (7.00 m)
Length	45 ft 6 in (13.86 m)
Height	16 ft 5 in (5.00 m)
Turboprop engine	1 x 1 975 shp Dart R. Da.7

In service with French Navy in 1959 and with Indian Navy in 1961. Production ceased 1963



Buccaneer S. Mk 2 Hawker Siddeley (UK)

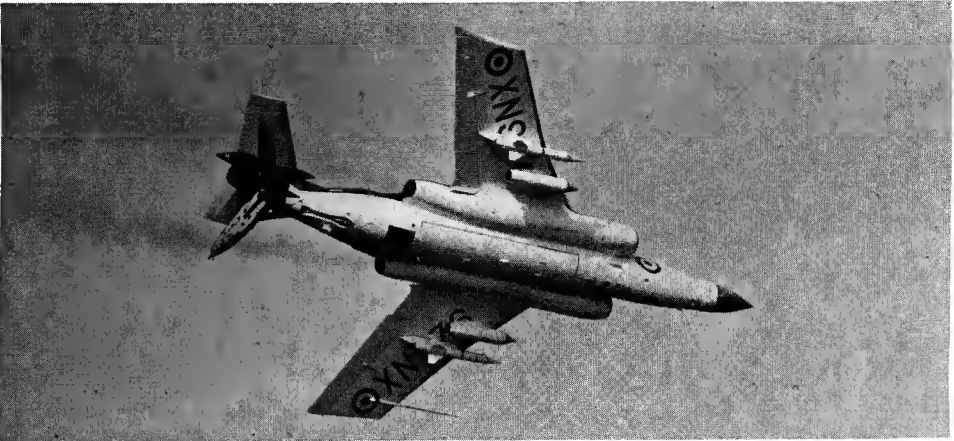
Two-seat carrier-borne all-weather strike aircraft

Max. speed	Trans-sonic at low altitudes
Armament	Nuclear weapons in bomb bay; Bullpup missiles, bombs, or rocket packs on underwing pylons
Wing span	42 ft 4 in (12.90 m)
Width folded	19 ft 11 in (6.07 m)
Length overall	63 ft 5 in (19.33 m)
Length folded	51 ft 10 in (15.79 m)
Height overall	16 ft 6 in (5.03 m)
Height folded	16 ft 8 in (5.08 m)
Turbojet engines	2 x 11 255 lb (5 105 kg) st R8.168 Spey

In service with the Royal Navy since 1965. Still in production.

Buccaneer S. Mk 1

First version, powered by 2 x 7 100 lb (3 220 kg) st Bristol Siddeley Gyron Junior turbojet engines, operational with Royal Navy since 1961



A-7B Corsair II Ling-Temco-Vought (USA)

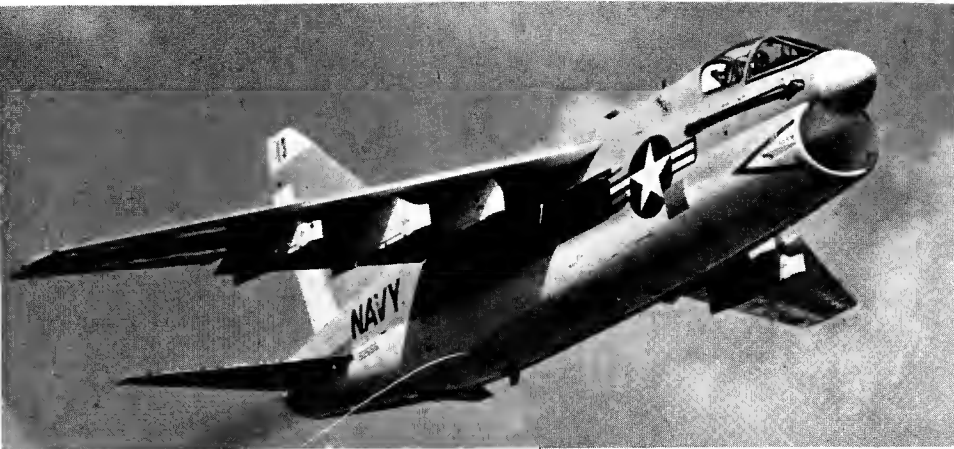
Single-seat carrier-borne attack aircraft

Max. speed at S/L	500 knots
Radius of action	620 n. miles
Max. T-O weight	32 500 lb (14 750 kg)
Armament	2-20 mm guns plus bombs on underwing pylons; normal load 4 000 lb (1 815 kg), max. load on short missions 15 000 lb (6 800 kg)
Wing span	38 ft 9 in (11.80 m)
Width, folded	23 ft 9 in (7.24 m)
Length overall	46 ft 1 1/2 in (14.06 m)
Height overall	16 ft 2 in (4.93 m)
Turbofan engine	1 x 14 000 lb (6 350 kg) st. TF30-P-8

In service with US Navy 1967

A-7E Corsair II

As above but with Integrated Light Attack Avionics System (ILAAS) which includes Head-Up Display and forward looking radar.



F-8 Crusader Ling-Temco-Vought (USA)

Single-seat carrier-borne fighter

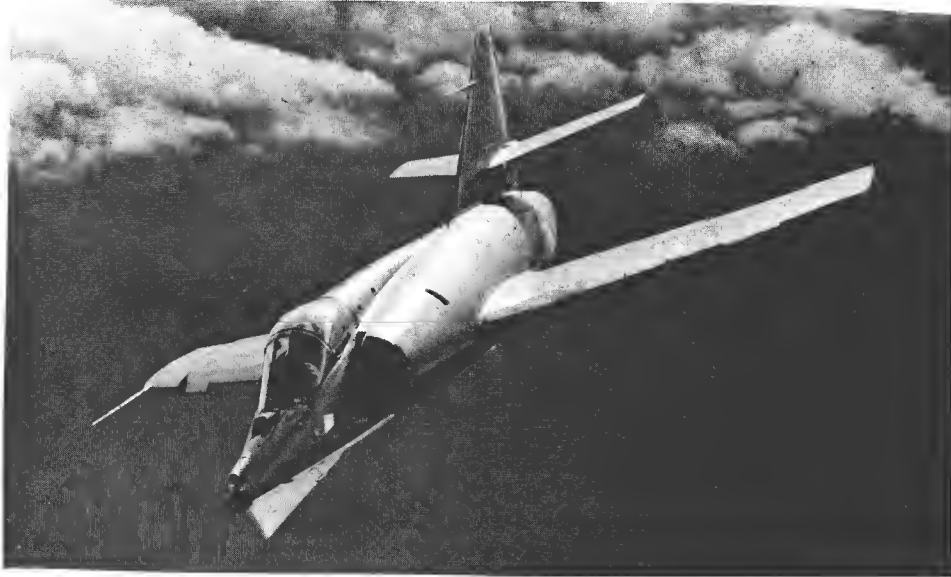
Max. speed	F-8A, B, C: over 870 knots F-8D, E: nearly Mach 2
Armament	4-20 mm Colt cannon; Side winder missiles, 2 in F-8A, C; 4 in F-8D, E
Max. T-O weight	34 000 lb (15 420 kg)
Wing span	F-8A, B: 35 ft 8 in (10.87 m) F-8C, D, E: 35 ft 2 in (10.72 m)
Wings folded	22 ft 6 in (6.86 m)
Length overall	F-8A, B, C, D: 54 ft 3 in (16.54 m) F-8E: 54 ft 6 in (16.61 m)
Height overall	15 ft 9 in (4.80 m)
Turbojet engine	F-8A, B, C: 1 x 16 000 lb (7 255 kg) J57-P-12 F-8D, E: 1 x 16 900 lb (7 665 kg) J57-P-16

In service with US Navy since 1957. Production ceased in 1965. F-8G, H, J are modernised remanufactured versions of A, D, E.

F-8E(FN) Crusader

As F-8E but with certain modifications to provide reduced landing speed and with provision for carrying Matra R. 530 missiles in addition to Side-winders. In service with French Navy in 1964



**ETENDARD IV-M**

Dassault (France)

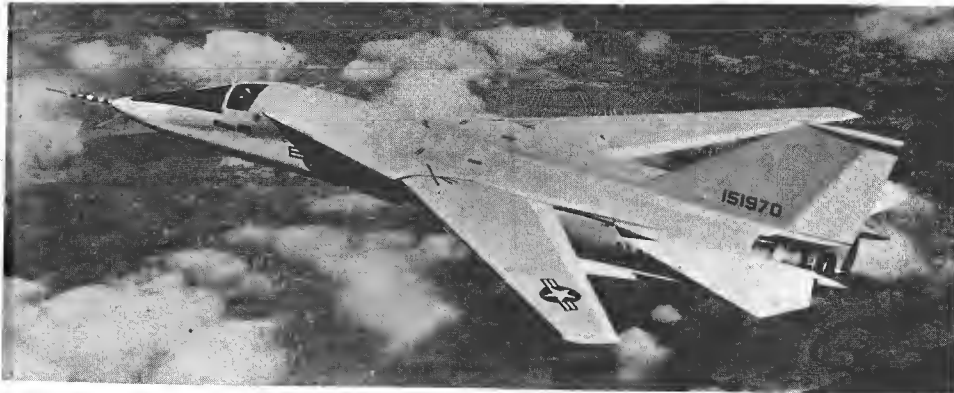
Carrier-borne single seat strike aircraft

Max. speed at 36 000 ft (11 000 m)	Mach 1.02
Max. cruising at 25 000 ft (7 600 m)	Mach 0.90
Service ceiling	49 200 ft (15 000 m)
Combat range low level	320 n. miles
Combat range medium level	870 n. miles
Armament	2 x 30 mm cannons. 3 000 lb (1 060 kg) bombs, rockets or missiles underwing
Normal T-O weight	18 000 lb (8 170 kg)
Max. T-O weight	22 650 lb (10 275 kg)
Wing span	31 ft 6 in (9 60 m)
Wings folded	25 ft 7 in (7 80 m)
Length overall	47 ft 3 in (14 40 m)
Height overall	14 ft 1 in (4 30 m)
Turbojet engine	1 x 9 700 lb (4 400 kg) st Atar 8

In service with French Navy 1962. Production ceased in 1964

ETENDARD IV-P

Dual-purpose reconnaissance/tanker version of the IV-M in service with the French Navy. Has nose and ventral camera positions, and flight refuelling equipment.

**F-111B**

General Dynamics /Grumman (USA)

Two-seat variable geometry carrier-borne fighter

Sweepback of wings variable in flight from 16° (fully extended for take-off and landing) to 72° 30' (for max speed)

Max. speed	Mach 2.5 at height; Mach 1.2 at S/L
Range, max. fuel	over 3 300 n. miles
Service ceiling	over 60 000 ft (18 300 m)
Wing span, extended	70 ft 0 in (21 34 m)
Wing span, swept	33 ft 11 in (10 34 m)
Length, normal	66 ft 9 in (20 35 m)
Length, nose folded	61 ft 8 in (18 79 m)
Height overall	16 ft 8 in (5 08 m)
Turbofan engines	2 x Pratt & Whitney TF30-P-1, 19 000 lb (8 620 kg) st with after burning

Scheduled for service with US Navy in 1969

**GANNET AEW Mk. 3**

Westland (UK)

Three-seat carrier-borne early-warning aircraft

The early warning electronics, carried in a radome under the fuselage, enable these aircraft to detect movement of aircraft and ships at considerable distances.

Max. speed	Approx 220 knots
Endurance	5-6 hours at 120 knots
Weight loaded	Approx 22 000 lb (10 000 kg)
Wing span	54 ft 4 in (16 56 m)
Width folded	19 ft 11 in (6 07 m)
Length	44 ft 0 in (13 41 m)
Height	16 ft 10 in (5 13 m)
Turboprop engine	1 x 3 875 ehp Bristol Siddeley Double Mamba 102
Propellers,	2-Rotol contra-rotating

**C-2A GREYHOUND**

Grumman (USA)

Carrier On-board Delivery (COD) all-weather transport

Derived from the E-2A Hawkeye (same airframe, folding wings and power plant) the C-2A is designed to deliver cargo to aircraft carriers of the US Navy. The cabin floor is strengthened to 300 lb/sq. ft (1 465 kg/m²). Additional fuel tanks. Differences as follows:-

Max. speed at 11 300 ft (3 450 metres)	286 knots
Cruising speed at 27 300 ft (8 320 m)	266 knots
Range at cruising speed	1320 n. miles
Max. T-O weight	54 812 lb (24 862 kg)
Weight empty	31 674 lb (14 367 kg)
Length overall	56 ft 6 in (17 22 m)
Height overall	15 ft 11 in (4 85 m)

In service with US Navy 1966.

E-2A HAWKEYE Grumman (USA)

Carrier-borne all-weather early warning aircraft

Prominent feature is a 24 ft 0 in (7.32 metre) diameter saucer-shape radome, rotating at 6 rpm in flight, on a pylon above the fuselage. The early warning and command electronics carried, including Airborne Tactical Data System (ATDS), give these aircraft the capability of detecting approaching high-Mach-number enemy aircraft at an early stage and controlling carrier-borne fighters to intercept them. Crew of 5.

Max. speed at S/L 258 knots
Normal operating height 30 000 ft (9 150 m)
Endurance, max. fuel 7 hours
Max. T-O weight 49 500 lb (22 450 kg)
Wing span 80 ft 7 in (24.56 m)
Wings folded 29 ft 4 in (8.94 m)
Length overall 56 ft 4 in (17.17 m)
Height overall 16 ft 5 in (5.00 m)
Turboprop engines 2 x 4 050 eshp Allison T56-A-8
Propellers Aero products N41 4-blade fully-feathering reversible

In service with US Navy since Jan. 1964



A-6A INTRUDER Grumman (USA)

Two-seat carrier-borne low level attack bomber

Max. speed at S/L Mach 0.95
Ferry range 2 600 n. miles
Armament 18 000 lb (8 165 kg) of bombs and missiles
Max. T-O weight 54 000 lb (24 500 kg)
Wing span 53 ft 0 in (16.15 m)
Wings folded 25 ft 2 in (7.66 m)
Length overall 54 ft 7 in (16.6 m)
Height overall 15 ft 1½ in (4.62 m)
Wheel track 10 ft 10 in (3.30 m)
Turbojet engines 2 x 8 500 lb (3 855 kg) st J52-P-6

In service with US Navy since 1963



EA-6A INTRUDER Two-seat carrier-borne electronic counter-measures aircraft

Equipped to support strike aircraft and ground forces by suppressing enemy electronic activity and to obtain tactical electronic intelligence. Retains partial strike capability. Has radome at top of tail fin and wing tip aerials. Length overall 55 ft 6 in (16.91 metres), height overall 16 ft 7 in (5.06 metres)

In service with US Marine Corps.

F-4B PHANTOM II McDonnell (USA)

Two-seat all-weather carrier-borne fighter

Max. speed over Mach 2
Combat radius 780-870 nautical miles
Ferry range 2 000 nautical miles
Combat ceiling 71 000 ft (21 640 m)
Armament Sparrow or Sidewinder air-to-air missiles; alternatively — missiles and bombs up to 16 000 lb (7 250 kg)
Max. T-O weight 54 600 lb (24 765 kg)
Wing span 38 ft 5 in (11.70 m)
Wings folded 27 ft 6½ in (8.39 m)
Length overall 58 ft 3 in (17.76 m)
Height overall 16 ft 3 in (4.96 m)
Wheel track 17 ft 10½ in (5.30 m)
Turbojet engines 2 x 16 500 lb (7 485 kg) st with afterburning J79-GE-8

In service with US Navy and US Marine Corps since 1962.
Still in production.



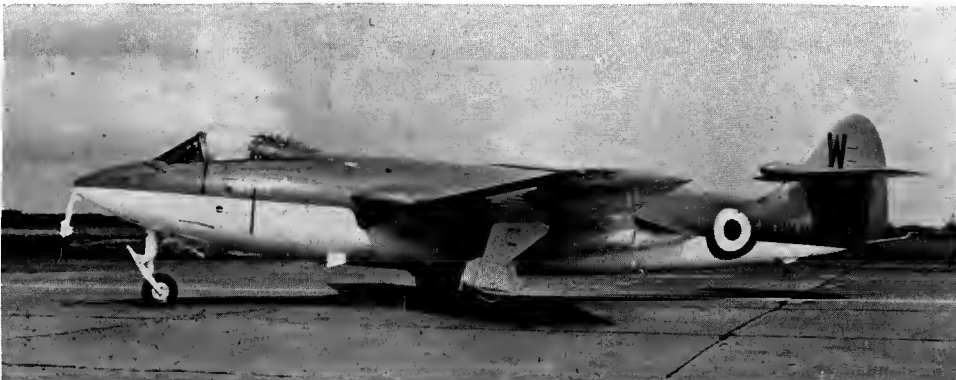
F-4K PHANTOM II Characteristics as above, but fitted with Rolls-Royce RB 168-25R Mark 201 Spey turbo fan engines. Scheduled for service with British Navy late 1967.

SEA HAWK Hawker Siddeley (UK)

Carrier-borne single-seat and fighter/bomber

Max. speed at S/L 450 knots
Range 250 n. miles
Armament 2 x 500 lb bombs, rockets, guns
Weight, loaded 16 200 lb (7 355 kg)
Wing span 39 ft 0 in (11.89 m)
Width folded 13 ft 4 in (4.04 m)
Length 39 ft 8 in (12.09 m)
Height 8 ft 8 in (2.64 m)
Height, wings folded 16 ft 10 in (5.13 m)
Turbojet engine 1 x 5 400 lb (2 450 kg) st Nene 103

In service with Indian Navy 1960





SEA VIXEN F(AW) Mks. 1 and 2 Hawker Siddeley (UK)

Two-seat carrier-borne all-weather fighter

Max. speed	Approx 610 knots
Service ceiling	Approx 48 000 ft (14 630 m)
Loaded weight	Approx 36 000 lb (16 300)
Armament, Mk. 1	Firestreak missiles, 500 lb bombs, rocket packs
Armament Mk 2	As Mk 1 but Red Top missiles instead of Firestreaks
Wing span	50 ft 0 in (15.24 m)
Width folded	22 ft 3 in (6.78 m)
Length overall	53 ft 6½ in (16.31 m)
Length folded	50 ft 2½ in (15.30 m)
Height overall	11 ft 0 in (3.35 m) approx
Wings folded	14 ft 11½ in (4.55 m)
Wheel track	17 ft 2½ in (5.22 m)
Turbojet engines	2 x 11 250 lb (5 100 kg) st Rolls Royce Avon RA24 Mk. 208

In service with Royal Navy since 1959



A-4B SKYHAWK

Douglas (USA)

Single-seat carrier-borne attack bomber

Max. speed	590 knots
Range, external tanks	over 1 740 n.miles
Armament	2-20 mm Colt cannon in wing roots, plus 5 000 lb (2 270 kg) of bombs, missiles, gun pods, torpedoes, etc.
Max. T-O weight	24 500 lb (11 113 kg)
Wing span	27 ft 0 in (8.23 m)
Length overall	39 ft 4 in (12.0 m)
Height overall	15 ft 2 in (4.62 m)
Wheel track	7 ft 9½ in (2.38 m)
Turbojet engine	1 x 7 700 lb (3 490 kg) st J65-W-16A

In service with US Navy since 1956. Argentine Navy has 50 reconditioned A-4B's

A-4C. Similar to A-4B but improved all-weather capabilities. Length increased to 42 ft 11 in (13.07 metres). In service with US Navy since 1959

A-4E. Powered by T x 8 500 lb (3 855 kg) s.t. J52-P-6 turbojet, giving increased payload up to 8 200 lb (3 720 kg) of weapons and 27% greater range. In service with US Navy since 1962 and with Royal Australian Navy.

A-4F. Powered by 1 x 9 300 lb (4 218 kg) st J52-P-8A turbojet. Has various new equipment and design improvements including new lift-spoilers to shorten landing run by about 1 000 feet (305 metres). Scheduled for service with US Navy in 1967

TA-4F. Tandem two-seat dual control trainer version of A-4F. In service 1966 with US Navy and Royal Australian Navy.



A3D-2 SKYWARRIOR

Douglas (USA)

Carrier-borne three-seat attack bomber

Max. speed	550 knots
Service ceiling	45 000 ft (13 780 m)
Normal range	2 500 n.miles
Armament	Radar-directed twin-cannon turret in tail. 15 feet (4.6 m) long bomb bay.
Normal loaded weight	70 000 lb (31 780 kg)
Overload weight	73 000 lb (33 100 kg)
Wing span	72 ft 5 in (22.07 m)
Length	75 ft 7 in (23.04 m)
Height	22 ft 8 ins (6.91 m)
Turbojet engines	2 x 10 500 lb (4 760 kg) st J57-P-10
JATO units	12 x 4 500 lb (2 040 kg) st jettisonable rockets can be mounted on sides of rear fuselage

In service with the US Navy in 1957

A3D-2P Photographic/reconnaissance in 1958

A3D-2Q Radar countermeasures in 1959

A2D-2T Trainer in 1959

Production ceased in 1961



E-1B TRACER

Grumman (USA)

Carrier-based airborne early warning aircraft

A modification of the S-2 Tracker, with new twin-fin tail, the E-1B is surmounted by a 20 ft. x 30 ft (6.1 x 9.1 metres) radome, housing long-range radar antennae. All-weather operation for airborne early warning and directing fighter aircraft. Wings fold back against the fuselage instead of upwards.

Normal T-O weight	27 000 lb (12 250 kg)
Wing span	72 ft 4 in (22.04 m)
Length	45 ft 4 in (13.82 m)
Height	16 ft 10 in (5.13 m)

In service with US Navy 1960

S-2D TRACKER

Grumman (USA)

Carrier-borne anti-submarine aircraft

Carries electronic search equipment plus torpedoes, depth charges and rockets

Max. speed at S/L	243 knots
Patrol speed	130 knots at 1 500 ft (450 m)
Endurance, max fuel	9 hours
Max. T-O weight	26 147 lb (11 860 kg)
Wing span	72 ft 7 in (22.13 m)
Wings folded	27 ft 4 in (8.33 m)
Length overall	43 ft 6 in (13.26 m)
Height overall	17 ft 6 in (5.33 m)
Wheel track	18 ft 6 in (5.64 m)
Piston engines	2 x 1 525 hp Wright R-1820-82W
	9-cyl aircooled radial
Propellers	3-blade constant speed

Other variations are: **S-2A** production started 1953, **S-2C** and **S-2E**. The last is still in production. In service with US Navy and the navies of Brazil (12), Italy (40), Japan (60) and Netherlands (26)

CS2F. Version built under licence by De Havilland Aircraft of Canada for Canadian Navy (83) and Netherlands Navy (17)

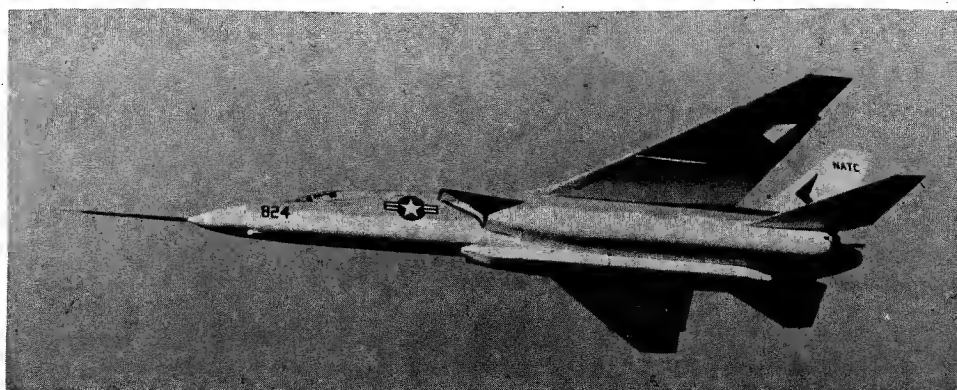
**A-5A VIGILANTE**

North American (USA)

Two-seat carrier-borne attack bomber

Max. speed	Mach 2.1
Service ceiling	60 000 ft (18 300 m)
Normal range	2 000 n. miles
Max. T-O weight	60 000 lb (27 200 kg)
Armament	Bombs and air to surface missiles
Wing span	53 ft 0 in (16.15 m)
Wings folded	42 ft 0 in (12.80 m)
Length overall	73 ft 2½ in (22.31 m)
Length, nose and tail folded	65 ft 4½ in (19.93 m)
Height overall	19 ft 4½ in (5.91 m)
Turbojet engines	2 x 10 900 lb (4 945 kg) st. J79-GE-8; 2 x 17 000 lb (7 700 kg) with afterburning

In service with US Navy since 1961

**RA-5C VIGILANTE****Reconnaissance-attack bomber**

Characteristics similar to above, but fitted with additional fuel tank, boundary layer blowing over whole wing surface, reconnaissance equipment including cameras, radar, TV, infra-red sensors.

In service with US Navy since 1964

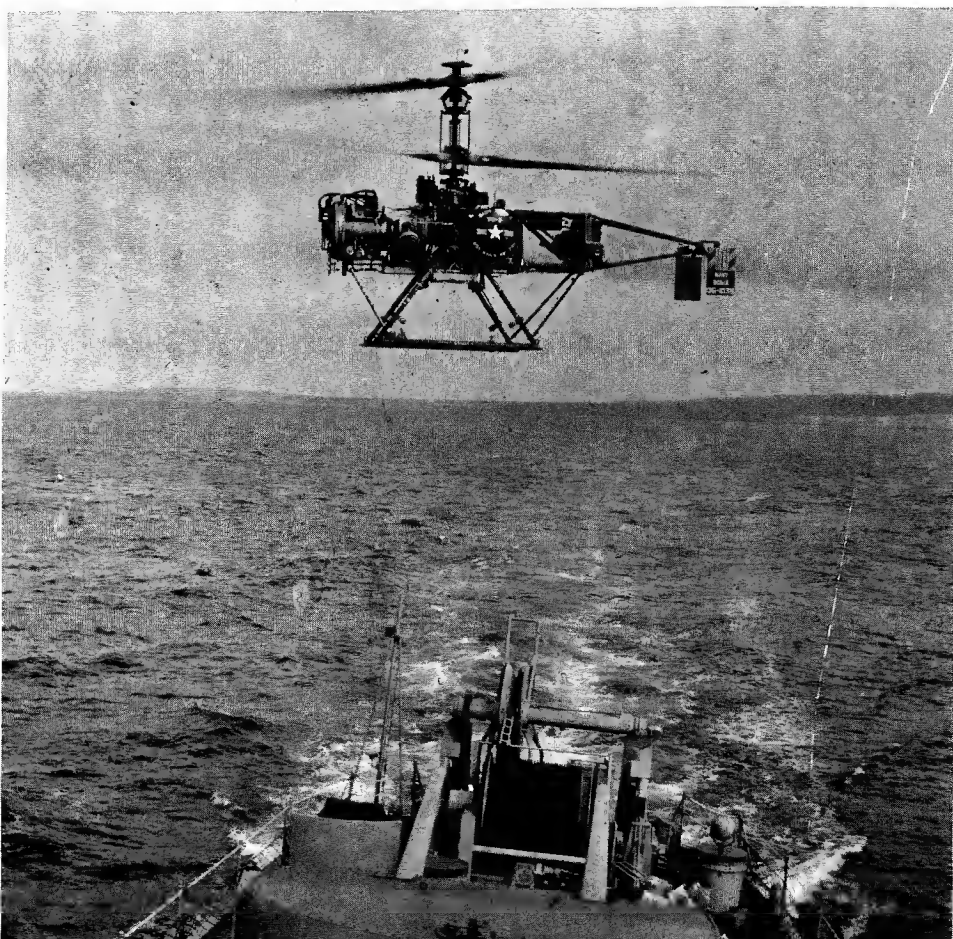
DRONE HELICOPTER**QH-50 C and D**

Gyrodyne (USA)

Ship-borne remotely controlled Drone Anti-Submarine Helicopter (DASH)

Max. speed	80 knots
Cruising speed	60 knots
Service ceiling	(QH-50C) 16 500 ft (5 030 m)
	(QH-50D) 25 000 ft (7 620 m)
Hovering ceiling	(QH-50C) 11 300 ft (3 445 m)
	(QH-50D) 16 000 ft (4 875 m)
Range	60 n. miles
Armament	2 Mk. 46 rocket torpedoes or 1 torpedo and 1 sono-buoy
Max. T-O weight	(QH-50C) 2 300 lb (1 043 kg)
	(QH-50D) 2 350 lb (1 066 kg)
Rotor diam.	20 ft 0 in (6.10 m)
Shaft-turbine engine	
	(50C) 1 x 300 shp T50-BO-8A
	(50D) 1 x 300 shp T50-BO-10

The QH-50C went into service with the US Navy in Jan. 1962, being superseded by the QH-50D in late 1965. The DASH system, of which the QH-50 is the weapon-carrying mobile part, is deployed on a large number of US Navy vessels. Take off and landing are visually controlled by the Deck Control Officer, who hands over to the ship's combat information centre (CIC) when the drone is in flight and tracked by radar. With the target's position plotted from sonar information, CIC adjusts the drone's course, height and speed and, over the target, actuates the arming and weapon release switches, and returns the drone to the ship.





AGUSTA A 106

Agusta (Italy)

Single-seat ship-borne ASW light helicopter

Max. speed	108 knots
Cruising speed	100 knots
Hovering ceiling	6 560 ft (2 000 m)
Endurance	2 hours
Armament	2 Mk 44 torpedoes
Max. T-O weight	3 000 lb (1 360 kg)
Main rotor diam	31 ft 2 in (9.50 m)
Length overall	36 ft 0 in (10.97 m)
Length folded	22 ft 8 in (6.90 m)
Shaft-turbine engine	1 x 300 shp Turbomeca-Agusta TAA-230



AGUSTA-BELL 204 B

Agusta (Italy)

Ship-borne ASW helicopter

Max. speed at S/L	120 knots
Cruising speed	104 knots
Hovering ceiling	4 400 ft (1 340 m)
Electronics	Dipping sonar
Armament	2 Mk 44 torpedoes
Normal T-O weight	8 500 lb (3 850 kg)
Max. T-O weight	9 500 lb (4 380 kg)
Max. endurance	4 hrs. (no reserves)
Main rotor diam.	48 ft 0 in (14.63 m)
Length overall	57 ft 0 in (17.37 m)
Length fuselage	44 ft 7 in (13.59 m)
Shaft-turbine engine	1 x 1 100 eshp Lycoming T53-11

This is the Bell UH-1B built under licence. Can be powered by Bristol Siddeley Gnome 1 100 or 1 200. In service with Italian and Spanish navies.



Ka-15 (code name "Hen")

Kamov (USSR)

Ship-borne light utility helicopter

Max. speed	81 knots
Cruising speed	67.5 knots
Service ceiling	9 840 ft (3 000 m)
Hovering ceiling	2 230 ft (680 m)
Normal endurance	2.5 hours
Max. endurance	4 hours
Piston engine	1 x 275 hp A1-14V radial
Rotors, 3-blade	32 ft 9 in (9.97 m) diam, contra-rotating

In service with Soviet Naval Airfleet



Ka-20 (code name "Harp")

Kamov (USSR)

Ship-borne ASW helicopter

Max. speed	130 knots
Armament	Air to-surface missiles carried externally
T-O Weight	11 000 lb (5 000 kg)
Rotors, 3-blade	32 ft 9 in (9.97 m) diam, contra-rotating
Shaft-turbine engines	2

In service with Soviet Naval Air Fleet

Mi-4 (code name "Hound") Mil (USSR)

General purpose transport helicopter

Max. speed	113 knots
Econ. cruising speed	86 knots
Service ceiling	18 000 ft (5 500 m)
Range (900 kg payload)	200 n. miles
Max. payload	3 830 lb (1 740 kg)
Normal T-O weight	16 530 lb (7 500 kg)
Max. T-O weight	17 200 lb (7 800 kg)
Main rotor (5-blade)	68 ft 11 in (21.0 m) diam.
Length of fuselage	55 ft 1 in (16.8 m)
Height overall	17 ft 0 in (5.18 m)
Piston engine	1 x 1 700 hp ASh-82 V radial

In service with Soviet Naval Air Fleet



S-55 Sikorsky (USA)

General purpose transport helicopter

Max. speed at S/L	97 knots
Cruising speed	79 knots
Hovering ceiling OGE	2 300 ft (700 m)
Range	315 n. miles
Max. T-O weight	7 900 lb (3 580 kg)
Max. payload	2 250 lb (1 020 kg)
Main rotor (3-blade)	53 ft 0 in (16.16 m) diam.
Fuselage length	42 ft 3 in (12.88 m)
Height overall	13 ft 4 in (4.07 m)
Piston engine	1 x 800 hp R-1300-3 radial

Adopted by a number of navies, first versions in service in 1950. The Westland Whirlwind is the anglicised version of the S-55



S-56 Sikorsky (USA)

Assault transport helicopter

Max. speed at S/L	112 knots
Cruising speed	100 knots
Hovering ceiling OGE	1 100 ft (335 m)
Service ceiling	8 700 ft (2 650 m)
Range	130 n. miles
Cabin accommodation	2 crew plus 1 900 cu ft (53.8 m³) cargo, or 20 passengers
Main rotor (5-blade)	72 ft 0 in (21.95 m)
Fuselage length	64 ft 10 in (19.76 m)
Height overall	22 ft 0 in (6.71 m)
Normal T-O weight	31 000 lb (14 100 kg)
Piston engines	2 x 1 900 hp R-280 18-cyl. radial

In service with US Marines 1955. Production ceased 1960



SH-34 SEABAT Sikorsky (USA)

Anti-submarine warfare helicopter

Max. speed at S/L	106 knots
Cruising speed	85 knots
Service ceiling	9 500 ft (2 900 m)
Hovering ceiling (OGE)	2 400 ft (730 m)
Normal range	215 n. miles
Normal T-O weight	13 000 lb (5 900 kg)
Max. weight	14 000 lb (6 350 kg)
Main rotor diam.	56 ft 0 in (17.07 m)
Length overall	56 ft 8 in (17.27 m)
Length of fuselage	46 ft 9 in (14.25 m)
Width, rotors folded	12 ft 11 in (3.94 m)
Height overall	15 ft 11 in (4.85 m)
Piston engine	1 x 1 525 hp Wright R-1 820-84

The SH-34 Seabat and the variants listed below are all military versions of the Sikorsky S-58 and all have similar characteristics

CH-34 Choctaw in service with US Army
SH-34 G and J Seabat ASW version for US Navy
LH-34D Winterised version of Seabat
UH-34D Utility version for US Marine Corps





SH-3D SEA KING

Sikorsky (USA)

Amphibious all-weather ASW helicopter

Max. speed	135 knots
Cruise speed for max. range	118 knots
Service ceiling	10 800 ft (3 300 m)
Hovering ceiling OGE	6 500 ft (1 980 m)
Range with max. fuel	550 n. miles
Normal T-O weight	18 570 lb (8 425 kg)
Main rotor diam.	62 ft 0 in (18.90 m)
Length overall	72 ft 8 in (22.15 m)
Length of fuselage	54 ft 9 in (16.69 m)
Width, rotors folded	16 ft 4 in (4.98 m)
Height overall	16 ft 10 in (5.13 m)
Shaft-turbine engines	2 x 1 400 shp T58-GE-10

In service with US Navy and Spanish Navy in 1966 and ordered for Italian Navy. Westland are building SH-3D Sea King for Royal Navy, powered by Gnome engines.

SH-3A SEA KING

In service with Navies of US, Canada, Japan. Powered by 2 x 1 250 shp T58-GE-8B turboshaft engines.



CH-46A SEA KNIGHT

Boeing-Vertol (USA)

Ship-borne twin-engine transport helicopter

Max. speed	146 knots
Cruising speed	130 knots
Service ceiling	13 000 ft (3 960 m)
Hovering ceiling	5 250 ft (1 600 m)
Max. T-O weight	23 000 (10 430 kg)
Range, with 6 070 lb (2 750 kg) payload	200 nautical miles
Rotor diam.	50 ft 0 in (15.24 m)
Rotor centres	33 ft 4 in (10.16 m)
Length, fuselage	44 ft 10 in (13.66 m)
Shaft-turbine engines	2 x 1 250 shp T58-GE-8B

In service with US Marine Corps 1965

CH-46D SEA KNIGHT

As CH-46A but powered by 2 x 1 400 shp T58-GE-10 shaft turbine engines. In service 1966.

HKP-4. For Royal Swedish Navy and Air Force, powered by two Bristol Siddeley Gnome H. 1 200 shaft-turbine engines.



UH-2 SEASPRITE

Kaman (USA)

Ship-borne all-weather rescue and general purpose helicopter

Max. speed at S/L	140 knots
Normal cruising	132 knots
Service ceiling	17 400 ft (5 300 m)
Hovering ceiling	5 100 ft (1 555 m)
Max. range	580 n. miles
Normal T-O weight	8 637 lb (3 917 m)
Max. T-O weight	10 200 lb (4 625 m)
Main rotor diam.	44 ft 0 in (13.41 m)
Length overall	52 ft 2 in (15.90 m)
Length, blades folded	36 ft 7 in (11.15 m)
Height overall	13 ft 6 in (4.11 m)
Accommodation	Crew of 2 and 11/12 passengers
Shaft-turbine engine	1 x 1 250 shp T58-GE-8B

Entered service with US Navy in 1963. Tests being carried out of several UH-2C's modified to twin T58 engine configuration



CH-53A SEA STALLION

Sikorsky (USA)

Heavy Assault transport helicopter

Max. speed	170 knots
Cruising speed	150 knots
Service ceiling	18 550 ft (5 655 m)
Hovering ceiling OGE	4 800 ft (1 460 m)
Range with 4 000 lb fuel	222 n. miles
Normal T-O weight	35 000 lb (15 875 kg)
Normal payload	8 000 lb (3 630 kg)
Cabin: length	30 ft 0 in (9.14 m)
width	7 ft 6 in (2.29 m)
height	6 ft 6 in (1.98 m)
Main rotor diam.	72 ft 3 in (22.02 m)
Length overall	88 ft 3 in (26.92 m)
Length of fuselage	67 ft 2 in (20.47 m)
Width, rotors folded	15 ft 6 in (4.72 m)
Height overall	24 ft 11 in (7.60 m)
Shaft-turbine engines	2 x 2 850 shp T64-GE-6

In service with US Navy in 1966

SA 321 SUPER FRELON

Sud-Aviation (France)

Heavy duty helicopter

Max. speed at S/L	143 knots
Cruising speed	134 knots
Service ceiling	14 100 ft (4 300 m)
Hovering ceiling OGE	6 560 ft (2 000 m)
Range (3 000 kg payload)	270 n. miles
Ferry range (aux. tanks)	750 n. miles
Max payload	9 920 lb (4 500 kg)
Normal T-O weight	24 250 lb (11 000 kg)
Max T-O weight	26 450 lb (12 000 kg)
Cabin: length	22 ft 11 in (7.00 m)
width	6 ft 3 in (1.90 m)
height	6 ft 0 in (1.83 m)
Main rotor (6-blade)	62 ft 0 in (18.90 m)
Length overall	76 ft 7 in (23.0 m)
Length blades and tail folded	56 ft 0 in (17.07 m)
Width, blades and tail folded	17 ft 1 in (5.20 m)
Height	21 ft 11 in (6.60 m)
Shaft-turbine engines	3 x 1 500 shp Turmo IIIc

In service with French Navy

**UH-1E**

Bell (USA)

Assault support helicopter (ASH)

Max. speed	140 knots
Econ. cruising speed	120 knots
Service ceiling	16 700 ft (5 090 m)
Hovering ceiling (OGE)	11 800 ft (3 600 m)
Range (max. fuel)	250 n. miles
Max T-O weight	9 500 lb (4 300 kg)
Main rotor diam.	44 ft 0 in (13.41 m)
Length overall	53 ft 0 in (16.51 m)
Length of fuselage	42 ft 7 in (12.98 m)
Height overall	12 ft 8½ in (3.87 m)
Shaft-turbine engine	1 x 1 100 shp Lycoming T5309A

First deliveries to US Marine Corps, Feb. 1964

**WASP HAS Mk.1**

Westland (UK)

Ship-borne general purpose/ASW helicopter

Max. speed at S/L	105 knots
Cruising speed	96 knots
Ceiling	12 200 ft (3 720 m)
Hovering ceiling OGE	8 900 ft (2 715 m)
Range	235 n. miles
Max. payload	1 500 lb (680 kg)
Max. T-O weight	5 500 lb (2 495 kg)
Main rotor (4-blade)	32 ft 3 in (9.83 m) diam.
Length overall	40 ft 4 in (12.29 m)
Length of fuselage	30 ft 4 in (9.24 m)
Width, rotors folded	8 ft 8 in (2.64 m)
Height overall	11 ft 3 in (3.43 m)
Shaft-turbine engine	1 x 710 hp B-S Nimbus 103

In service with Royal Navy in 1963, and with the navies of Brazil, Netherlands, New Zealand, South Africa.

**WESSEX Mk. 1 and 3 (single engine) Mk. 5 (two engines)**

Westland (UK)

Ship-borne ASW/general purpose helicopter

Max. speed at S/L	115 knots
Cruising speed	105 knots
Hovering ceiling OGE	Mk.1 3 600 ft (1 100 m) Mk.5 4 000 ft (1 220 m)
Normal range	Mk.1 : 340 n. miles Mk.5 : 260 n. miles
Range, max. fuel	Mk.1 560 n. miles Mk.5 415 n. miles
Max. T-O weight	Mk.1 12 600 lb (5 715 kg) Mk.5 13 500 lb (6 120 kg)
Main rotor (4 blades)	56 ft 0 in (17.07 m) diam.
Length overall	65 ft 9 in (20.03 m)
Length of fuselage	48 ft 4½ in (14.74 m)
Length, blades and tail folded	38 ft 6 in (11.73 m)
Width folded	13 ft 4 in (4.06 m)
Height overall	16 ft 2 in (4.93 m)
	Mk.1 1 x 1 450 shp Gazelle 161 Mk.5 2 x 1 350 shp Gnome 110

HAS. Mk. 1 ASW duties with RN in 1961.**HAS. Mk. 3** Replacing Mk.1. 1 x 1 600 shp Gazelle 165**HAS. Mk. 31** Similar to Mk. 1 but with 1 x 1 540 shp Gazelle. In service 1962 with RAN**HU. Mk. 5** In service with RN in 1964 for Commando assault duties



WHIRLWIND HAR. Mks. 9 and 10 Westland (U.K.)

General purpose (transport/anti-ship) helicopter

Max. speed	122 knots
Cruising speed	120 knots
Service ceiling	16 600 ft (5060 m)
Hovering ceiling OGE	6 900 ft (2 100 m)
Armament (HAR Mk. 10)	4 Nord SS.11 air-to-surface missiles
Max. T-O weight	8 000 lb (3 630 kg)
Main rotor (3-blade)	53 ft 0 in (16 15 m) diam.
Length of fuselage	44 ft 2 in (13 46 m)
Height	13 ft 2½ in (4 03 m)
Shaft-turbine engine	1 × 1 050 shp Gnome H.1000

HAR. Mk.9 in service with Royal Navy for training, rescue and general duties

HAR.Mk.10 in service 1962 with RAF Coastal Command. Earlier versions of the Whirlwind were powered by piston engines—*Series 1*. 600 hp Pratt & Whitney R-1 340 or 700 hp Wright Cyclone 301. *Series 2*. 750 hp Alvis Leonides Major 755.

LAND BASED AIRCRAFT



HU-16B Albatross

Grumman (USA)

Amphibious utility transport/rescue/ASW flying boat

Max. speed	205 knots
Max. cruising speed	195 knots
Cruising speed for max. endurance	108 knots
Service ceiling	21 500 ft (6 550 m)
Range	2 500 n. miles
Armament (ASW version)	Torpedoes, depth charges, rockets
Cabin: length	26 ft 1 in (7 95 m)
width	7 ft 5 in (2 26 m)
height	6 ft 4 in (1 93 m)
Normal T-O weight	30 350 lb (17 000 kg)
Max. " "	37 500 lb (12 500 kg)
Piston engines	2 × 1 425 hp Wright R-1820-76A

In service with US Navy and Coast Guard and US Army, and for the Air Forces of a number of countries.

CSR-110

Modified HU-16B's for Canada for air/sea rescue duties. Powered by 2x1525 hp Canadian-built Wright R-1820-82 engines



CP-107 ARGUS Mk 2

Canadair (Canada)

Long-range maritime reconnaissance aircraft

Max. speed	250 knots
Cruising speed	150-175 knots
Service ceiling	over 20 000 ft (6 100 m)
Range	over 3 500 n. miles
Armament	Internal load 4 000 lb of bombs, torpedoes, etc. Missiles under wings
T-O weight	148 000 lb (67 130 kg)
Wing span	142 ft 3½ in (43 38 m)
Length	128 ft 3 in (39 09 m)
Height	36 ft 8½ in (11 19 m)
Piston engines	4 × 3 700 hp Wright R-3350

In service with Canadian Navy in 1958



Br 1150 ATLANTIC

Breguet (France)

Maritime patrol aircraft

Max. speed	330 knots
Range	3 600 n. miles at 170 knots
Gross weight	95 900 lb (43 500 kg)
Armament	Bombs, depth charges, homing torpedoes, rockets, air-to-surface missiles
Wing span	119 ft 1 in (36 3 m)
Length	104 ft 2 in (31 75 m)
Height	37 ft 1 m (11 3 m)
Turboprop engines	2 × 6 105 ehp Tyne R.Ty.20, Mk 21
Propeller (4-blade)	Ratier-built 16 ft. (4 88 m) diam. HSD constant speed

Breguet design. Built by consortium of companies comprising Breguet, Hispano, Sud Aviation (France); Fairey, SABCA, Fabrique Nationale (Belgium); Dornier (Germany); Fokker (Netherlands)

In service with French Navy and German Navy in 1966. 40 ordered for France and 20 for Germany scheduled for completion in 1968.

Be-10 (code name "Mallow") Beriev (USSR)

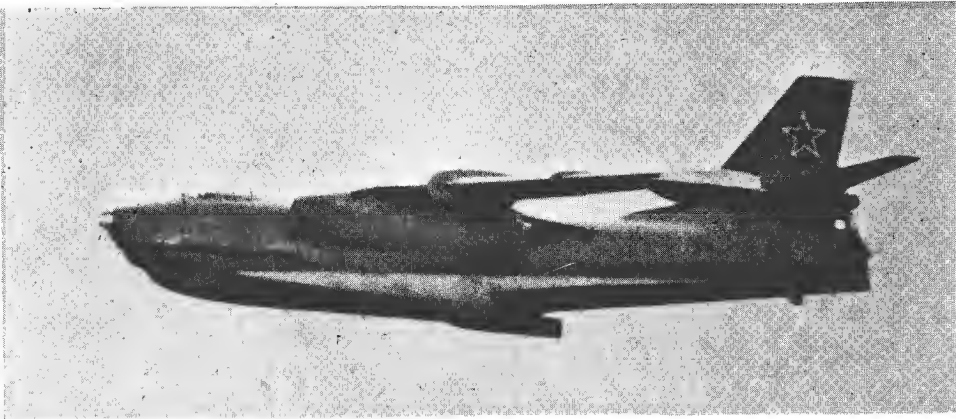
Long-range reconnaissance/attack flying boat

Wing span 80 ft 0 in (24.4 m)
Length overall 108 ft 0 in (33.0 m)
Turbojet engines 2 x 14 330 (6 500 kg) s.t. AL-7PB

This aircraft set up the following international records in 1961:

Speed over 25 km course 492 knots (912 kmh)
Speed over 1 000 km with 11 000 lb (5 000 kg) payload 474 knots (876 kmh)
Altitude, max. 49 088 ft (14 962 m)
Altitude, with 5 000 kg payload 46 135 ft (14 062 m)
Altitude, with 15 000 kg payload 39 360 ft (11 997 m)

In service with Soviet Naval Airfleet



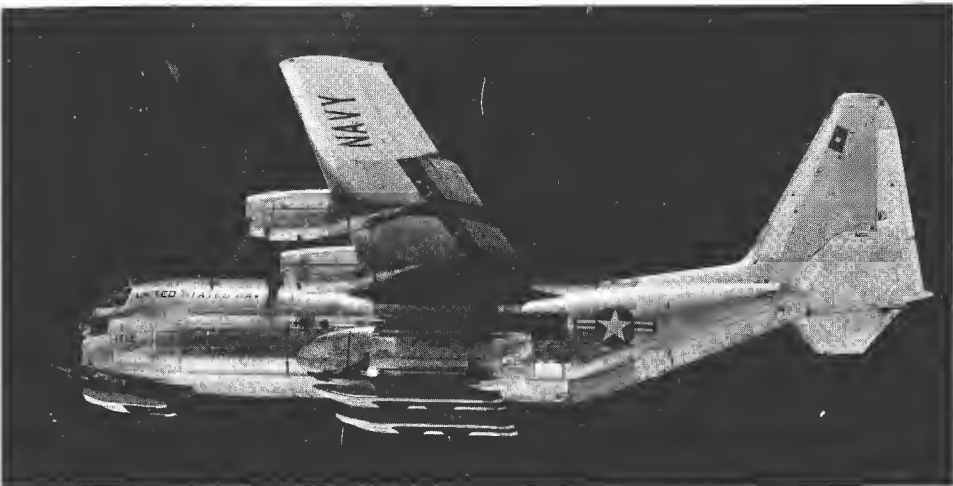
C-130E HERCULES Lockheed (USA)

Medium/long range transport

Max. level speed 318 knots
Max. cruising 305 knots
Econ. cruising 290 knots
Range with max. load 2 000 n. miles
Service ceiling 23 000 ft (7 010 m)
Max. payload 45 000 lb (20 410 kg)
Max. T-O weight 155 000 lb (70 310 kg)
Wing span 132 ft 7 in (40.25 m)
Length overall 97 ft 9 in (29.78 m)
Height over tail 38 ft 3 in (11.66 m)
Turboprop engines 4 x 4 050 eshp Allison T56-A-7
Propellers, 4-blade Hamilton Standard 54H60

In service with US Navy and US Coast Guard. First deliveries made in 1962

KC-130F. Assault transport/tanker in service with US Marine Corps. In-flight refuelling equipment can be quickly installed and removed. Can transfer 31 000 lb (14 000 kg) of fuel at 25 000 ft (7 620 m) at refuelling speed of 310 knots.

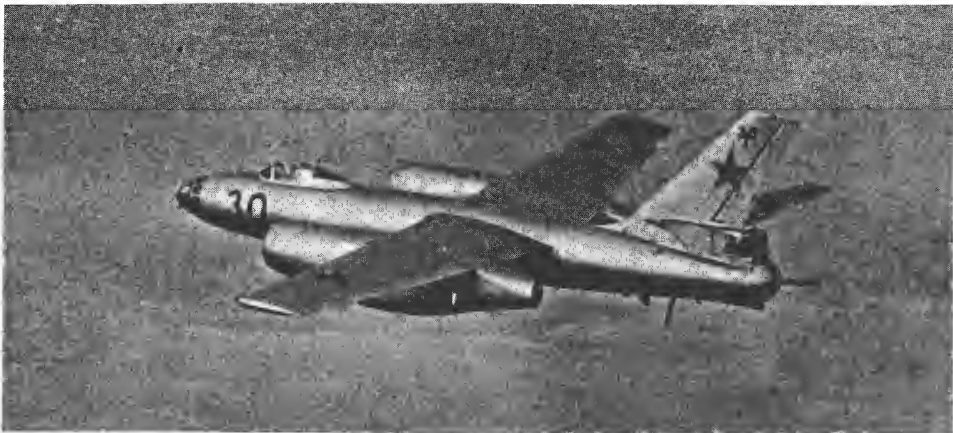


Il-28 Ilyushin (USSR)

Three seat light attack bomber

Max. speed at 20 000 ft (6 000 m) 500 knots
Cruising speed, 40 000 ft (12 000 m) 390 knots
Service ceiling 41 000 ft (12 500 m)
Range 1 300 n. miles
Armament 2 x 23 mm cannon in nose and in tail; bombs, torpedoes up to 4 400 lb (2 000 kg)
Normal T-O weight 38 000 lb (17 250 kg)
Max. T-O weight 44 000 lb (20 000 kg)
Wing span 68 ft 1 in (20.75 m)
Length 62 ft 0 in (8.90 m)
Height 22 ft 0 in (6.70 m)
Turbojet engines 2 x 5 950 lb (2 700 kg) st VK-1

In service with Soviet Naval Air Fleet (A-VMF) and in the Air Forces of China, Cuba, Czechoslovakia, Egypt, Hungary, Indonesia, Poland, Rumania.



LANSEN J32B SAAB (Sweden)

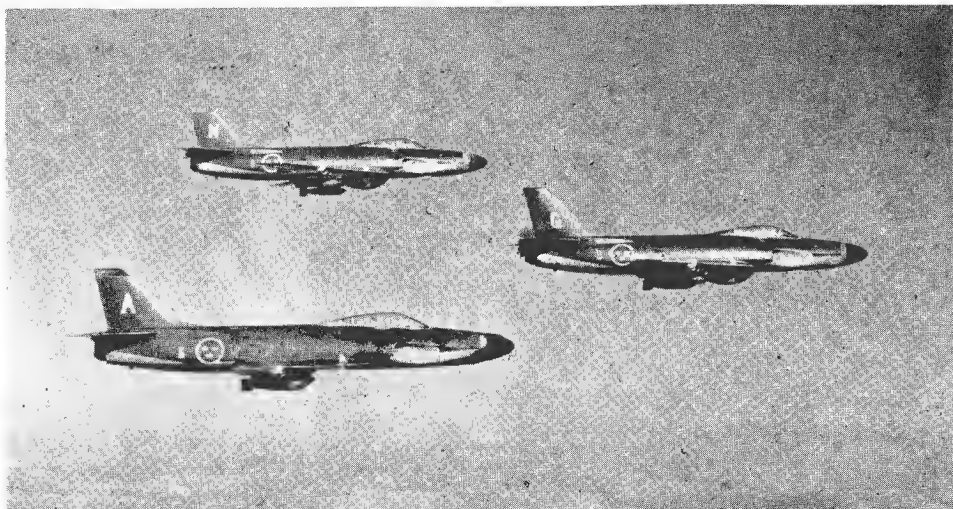
Land-based two-seat all-weather attack aircraft

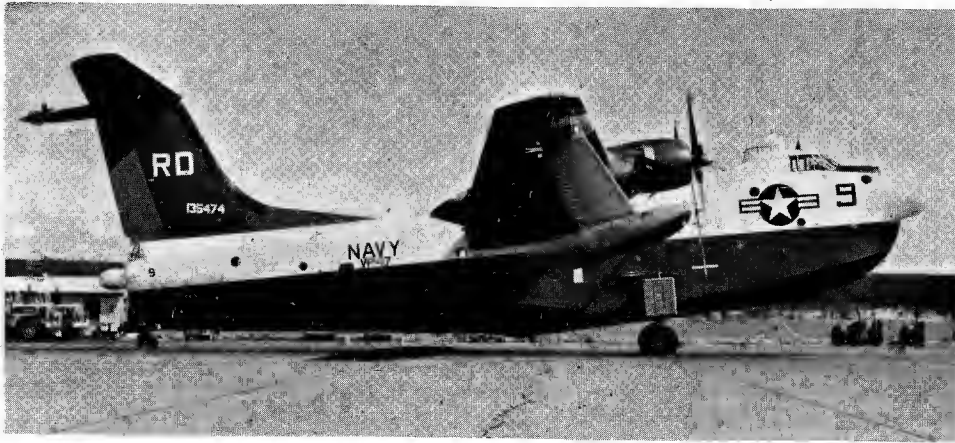
Max. speed 620 knots
Cruise at 36 000 feet (11 000 metres) 470 knots
Service ceiling 52 500 ft (16 000 m)
Normal range 750 nautical miles
Armament 4 cannon plus (underwing) bombs; rockets; R6304 or Side-winder AAMs; Rb-04-ASM's
T-O weight 29 750 lb (13 500 kg)
Wing span 42 ft 8 in (13.00 m)
Length overall 47 ft 7 in (14.50 m)
Height 15 ft 3 in (4.65 m)
Turbojet engine 1 x 11 000 lb (5 000 kg) st and 14 330 lb (6 500 kg) with reheat RM6A (Swedish-built Avon 200)

In service with Swedish Air Force in 1957

A32A First production aircraft in service in 1955. Production completed in 1958. Powered by RM5 (Swedish-built Avon 100) of 7920 lb (3 600 kg) s.t. and 9 900 lb (4 500 kg) with reheat. Same duties and similar armament as J32B but slightly inferior performance.

S 32C Photographic reconnaissance version of A32A in service in 1958





P5M-2 MARLIN

Martin (USA)

Twin-engine patrol flying boat

Max. speed at S/L	220 knots
Range (ASW mission)	1 800 n. miles
Ferry range	2 700 n. miles
Weight loaded	76 635 lb (34 760 kg)
Wing span	118 ft 2 in (36.02 m)
Length	100 ft 7 in (30.63 m)
Height	32 ft 8½ in (9.97 m)
Piston engines	2 x 3 400 hp Wright R-3350-32

In service with US Navy since 1954. Production ceased in 1960



P-2H NEPTUNE

Lockheed (USA)

Long-range maritime reconnaissance bomber

Max. speed	350 knots (with turbojets) 310 knots (piston engines only)
Patrol speed at 1 000 ft (305 m)	150-180 knots
Service ceiling	22 000 ft (6 700 m)
Max. range	3 200 n. miles
Armament	Internal load 8 000 lb (5 000 kg) of bombs, torpedoes, depth charges. Rockets under wings
Max. T-O weight	79 800 lb (36 200 kg)
Span over tip tanks	103 ft 10 in (31.65 m)
Length	91 ft 8 in (27.94 m)
Height	29 ft 4 in (8.94 m)
Piston engines plus	2 x 3 500 hp Wright R-3350-30W
Turbojet engines	2 x 3 400 lb (1 540 kg) st J34

In service with US, Canadian, French, Japanese and Netherlands Navies and Royal Australian Air Force. P-2E (without turbojets) in service with Brazil and Portugal.



P-3B ORION

Lockheed (USA)

Anti-Submarine Patrol Aircraft

Max level speed	413 knots at 15 000 ft (4 570 m)
Econ. cruising	345 knots at 25 000 ft (7 620 m)
Patrol speed	200 knots at 1 500 ft (450 m)
Max. mission radius	2 200 n. miles
Radius (3 hrs on station)	1 680 n. miles
Endurance, 4 engines	12.9 hours at 1 500 ft (450 m)
Endurance, 2 engines	17.0 hours at 1 500 ft (450 m)
Armament	Mines, torpedoes, depth charges
ASW equipment	Sonobuoys, underwater sound signals, marine markers, parachute flares
Expendable load	15 000 lb (6 800 kg)
Max. T-O weight	127 200 lb (57 700 kg)
Wing span	99 ft 8 in (30.37 m)
Length overall	116 ft 10 in (35.61 m)
Height over tail	33 ft 8½ in (10.29 m)
Wheel track	31 ft 2 in (9.50 m)
Turboprop engines	4 x 4 910 eshp Allison T56-A-14
Propellers, 4 blade	Hamilton Standard 54H60 constant speed

In service with US Navy and Royal New Zealand Navy. 10 ordered for Royal Australian Air Force. In current production.

P-3A ORION

Earlier model, generally similar to above but with 4 x 4 500 eshp Allison T56-A-10W engines. In service with US Navy since 1962. Production completed.

P-3C ORION

Advanced version scheduled for service in 1969



SHACKLETON MR Mk 3

H-S/Avro (UK)

Long-range maritime reconnaissance aircraft

Max. speed at 12 000 feet (3 660 m)	260 knots
Service ceiling	19 200 ft (5 850 m)
Range (at 175 knots at 1 500 feet)	3 200 n. miles
Weight loaded	100 000 lb (45 360 kg)
Wing span	119 ft 10 in (36.52 m)
Length	92 ft 6 in (28.19 m)
Height	23 ft 4 in (7.11 m)
Piston engines	4 x 2 455 hp RR Griffon 57A

In service with RAF Coastal Command and South African Air Force. To improve take-off weight and performance these aircraft are being given additional auxiliary power. Two BS Viper 203 turbojet engines of 2 500 lb (1 134 kg) st are being fitted, one in the rear of each outboard engine nacelle.

TU-16 (Code name *Badger*) Tupolev (USSR)

Long-range bomber/reconnaissance aircraft

Max. speed at 35 000 feet (10 700 metres) 510 knots
Cruising speed 430 knots
Service ceiling 42 650 ft (13 000 m)
Range, max. bomb load 2 600 n. miles
Range, 3 000 kg bombs 3 450 n. miles
Armament 19 800 lb (9 000 kg) bombs carried internally; or 2 "Kénnel" air-to-surface anti-ship missiles under wings; or "Kipper" stand-off bomb under fuselage. Forward dorsal, rear ventral and tail positions with 2 x 23 mm cannon and 1 cannon at starboard nose position.

Normal T-O weight, approx. 150 000 lb (68 000 kg)
Wing span 110 ft 0 in (33.5 m)
Length overall 120 ft 0 in (36.5 m)
Height 35 ft 6 in (10.8 m)
Turbojet engines 2 x 20 900 lb (9 500 kg) st. Mikulin AM-3M

In service with the Soviet Naval Air Fleet (A-VMF) since 1956; Egyptian Air Force and Indonesian Air Force since 1961

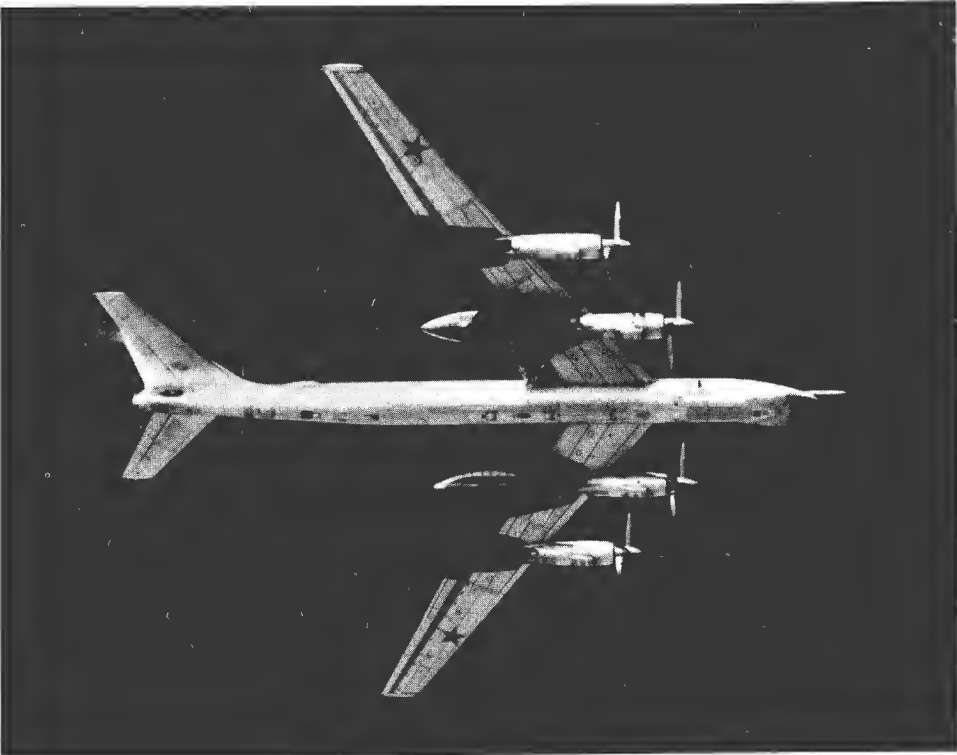


TU-20 (code name "*BEAR*") Tupolev (USSR)

Long range strategic bomber/reconnaissance aircraft

The figures given for this aircraft are estimated

Max. speed at 41 000 ft (12 500 m) 435 knots
Cruising at 32 000 ft (10 000 m) 410 knots
Range with max. bomb load 6 800 n. miles
Armament 25 000 lb (11 300 kg) bombs carried internally, or "Kangaroo" air-to-surface missile under fuselage, 2 x 23 mm cannon in dorsal ventral and tail positions
Loaded weight 340 000 lb (154 000 kg)
Wing span 164 ft (50 m)
Length 151 ft (46 m)
Turboprop engines 4 x 14 770 shp Kuznetsov NK-12M
In service with Soviet Naval Air Fleet (A-VMF)



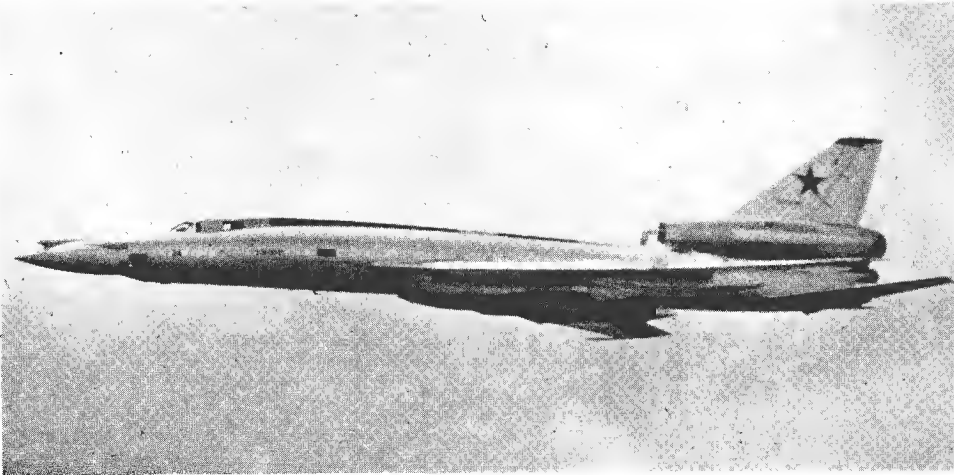
TU-22 (code name "*BLINDER*") Tupolev (USSR)

Intermediate-range strike and reconnaissance aircraft.

The figures given for this aircraft are estimated

Max. speed at 40 000 ft (12 200 m) over Mach 1.5
Cruising speed 550 knots
Service ceiling over 59 000 ft (18 000 m)
Range 1 250 n. miles
Armament "Kitchen" air-to-surface missile part-recessed under fuselage. Bombs, etc. carried internally
Loaded weight 180 000 lb (82 000 kg)
Wing span 82 ft (25 m)
Length 125 ft (38 m)
Turbojet engines 2 x 19 000 lb (8 600) st.

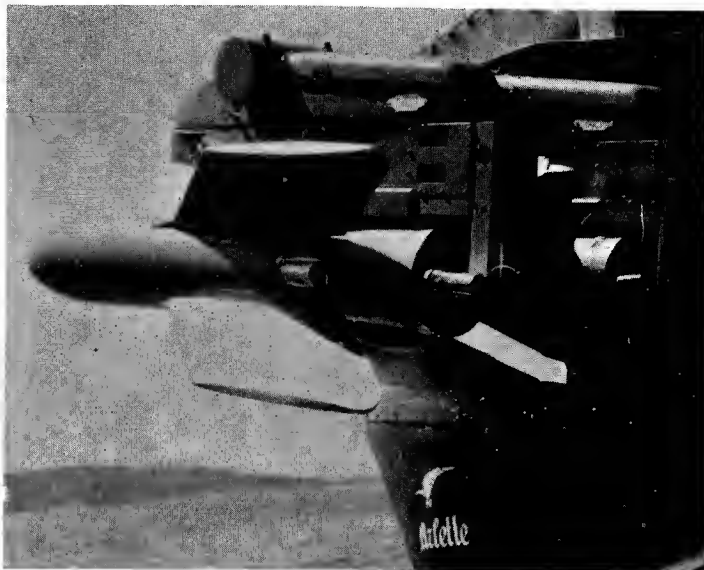
In service with Soviet Naval Air Fleet (A-VMF)



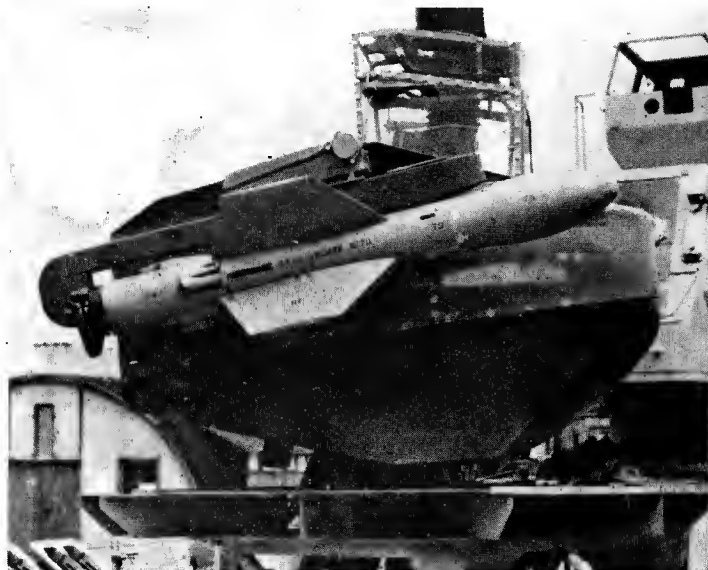
GUIDED MISSILES

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Short-range surface-to-surface—continued



SS-11 (B.1) Nord Aviation, France



SS-12-M Nord Aviation (France)

AS-11 (B.1) Nord Aviation (France)

Air-to surface wire-guided missile

Designed for use over sea and land down to very low altitudes, the AS-11 (B.1) is identical to the SS-11 (B.1) surface-to-surface missile (which see), except that the launching system varies and, due to the impetus given by air launching, its range is greater. The AS-11 (B.1) is carried by 14 different types of aircraft (fixed and rotary-wing) of 20 nations including all the ASW aircraft of the NATO countries.

AS-12
Very similar to the SS-12-M surface to surface missile (which see), the AS-12 is operational down to very low altitudes and at any aircraft speed up to 200 knots. It is standard equipment on 6 types of aeroplane and 4 types of helicopter. With little supplementary equipment on the aircraft this more powerful missile can replace the AS-11 (B.1). The AS-12 has been thoroughly tested as to safety and efficiency under all operational conditions, and approved for storage and handling in the French carriers *Clemenceau* and *Foch*. Developments are in hand to provide the AS-12 missile system with automatic guidance equipment derived from that of the Nord Aviation "Harpon" missile system.



AS-12 Nord Aviation (France)

AS-30 Nord Aviation (France)

Air-to-surface missile

Suitable for launching at very low altitudes, the AS-30 has a cylindrical body with 4 swept wings and carries a heavy perforating/exploding warhead. Guidance is by pilot-operated radio command and, from signals given by an IR error-sensing detector, the missile is kept to the line of sight of a gyro-stabilised optical system. It is powered by a solid propellant rocket motor.

Length	12 ft 10 in (3.90 m)
Body diam.	1 ft 1 1/2 in (0.342 m)
Wing span	3 ft 3 1/2 in (1.00 m)
Launch weight	1 100 lb (500 kg)
Warhead weight	51.0 lb (230 kg)
Range	7.5 miles (12 km)
Speed	Supersonic

At July 1967, over 5 000 AS-30 missiles had been manufactured or ordered, mainly for naval aircraft of several countries including France and the UK.

AS-30-L
This is a lightened version of the AS-30, with a reduced wing span and smaller warhead for use on lighter types of aircraft. It can be fired, without any new equipment, by all aircraft fitted for the heavier AS-30.

Wing span	2 ft 11 1/2 in (0.90 m)
Launch weight	840 lb (380 kg)
Warhead	256 lb (115 kg)

"KENNEL" (NATO code name) USSR

Air-to-surface turbojet-powered missile

Similar in appearance to the Regulus 1; carried one under each wing of the TU-16 bomber. Approximate dimensions are:—

Length	28 ft 0 in (8.5 m)
Wing span	16 ft 0 in (4.0 m)

BULLPUP AGM-12B

Martin (USA) WALLEYE GM Mk 1 Mod-0 Martin (USA)

Air-to-surface radio-guided missile

Cylindrical body with cruciform wings at rear and movable fore-planes on nose, powered by a Thiokol liquid propellant rocket motor. Carries a high-explosive warhead. Radio-controlled by pilot in flight; has two flares to assist visual tracking.	
Length	10 ft 6 in (3.20 m)
Body diam.	1 ft 0 in (0.30 m)
Wing span	3 ft 1 in (0.94 m)
Firing weight	571 lb (260 kg)
Speed	Mach 1.8
Range	7 miles (11 km)

BULLPUP AG M-12C

Larger and more powerful version of 12B above

Length	13 ft 7 in (4.14 m)
Body diam.	1 ft 6 in (0.45 m)
Wing span	4 ft 0 in (1.22 m)
Firing weight	1 785 lb (810 kg)
Range	10 miles (16.5 km)

"KIPPER" (NATO code name) USSR

Air-to-surface turbojet-powered missile

Has a conventional swept wing airplane configuration with an underslung power plant. It is about 31 ft (9.5 m) long. It is carried under the fuselage of the TU-16 ("Badger") twin-jet bomber.

Air-to-surface television-guided glide bomb missile

Torpedo-shaped body with cruciform wings having hinged control surfaces on trailing edges. Guidance is provided by a television camera which "locks on" and homes on the target, leaving the pilot free to take evasive action if necessary. Electric and hydraulic power for the guidance control system is provided by a ramjet turbine. Conventional high explosive warhead is fitted. Described by the US Navy as "the most accurate and effective air-to-surface conventional weapon ever developed". Reported to have shown exceptional accuracy at a range of several miles.

Length	11 ft 3 in (3.43 m)
Body diam.	1 ft 3 in (0.38 m)
Wing span	3 ft 9 in (1.14 m)

SHRIKE AGM-45A N.O.T.S. (USA)

Air-to-surface anti-radar guided missile

Cylindrical body with cruciform wings and tail fins, powered by a Rocketdyne solid-propellant rocket motor. It is armed with a high-explosive warhead, and has special guidance and control equipment, produced by Texas Instrument, to home it on to enemy radar installations. It is carried by carrier-based aircraft. Launching weight is estimated at 500 lb (225 kg) and range at 10 miles (16 km).

Surface-to-air

MASURCA Mk 2

Marine Française (France)

Surface-to-air guided missile

Developed to equip ships of the French Navy, this is a supersonic (over Mach 2.5) 2-stage solid, propellant missile, the first stage being a jettisonable booster. The high-explosive warhead is fitted with a proximity fuse. Stabilisation in flight is obtained by tail control surfaces in line with the cruciform low aspect ratio wings. The guidance system uses CSF and CFTH tracking and semi-active homing radars.

Length of missile 17 ft 4½ in (5.295 m)
Length with booster 28 ft 2½ in (8.600 m)
Body diam. 1 ft 4 in (0.405 m)
Span of booster fins 4 ft 11 in (1.500 m)
Launching weight 4 080 lb (1 850 kg)
Missile weight 1 850 lb (840 kg)
Range over 25 miles (40 km)

The Masureca weapon system was tested on the experimental ship *lle d'Oleron* and arms the new guided missile frigates *Suffrea* and *Duquesne*.
Masurca Mk 2 on shipboard launcher.

"GOA" (NATO code name)

USSR

Ship-borne surface-to-air missile

Two-stage solid-propellant missile, the cruciform wings of the larger diameter booster being indexed in line with the fixed rear mounted wings and movable fore planes of the sustainer stage. Approximate dimensions are:—

Length 20 ft 0 in (6.0 m)
Diam. of booster 2 ft 3 in (0.7 m)
Diam. of sustainer 1 ft 6 in (0.45 m)
Wing span 4 ft 0 in (1.22 m)

SEA DART

Hawker Siddeley (UK)

Medium-range ramjet-powered surface-to-air missile

(with surface-to-surface capability)

This is a two-stage weapon comprising an IMI solid propellant booster, and a sustainer (powered by a Bristol Siddeley Odin ramjet engine) carrying the warhead. It employs semi-active radar homing guidance using the Tracker Illuminated Radar Type 909. The cylindrical body has an air inlet in the nose for the ramjet duct, around which are disposed the guidance equipment and the warhead.

Length 14 ft 3½ in (4.36 m)
Body diam. 1 ft 4½ in (0.42 m)
Wing span 3 ft 0 in (0.91 m)

Seadart weapon system will be fitted to RN's new Type 82 destroyers.

SEACAT

Short Bros & Harland (UK)

Close range surface-to-air missile

Two-stage solid-propellant missile with cruciform movable swept-back wings and fixed tail surfaces on a cylindrical body. High explosive warhead with both contact and proximity fuses. Several fire control systems are in use.—Mk 20 Visual (British, Australian and Brazilian Navies); Mk 21 and 22 Radar director (British and New Zealand Navies); M 4/3 Radar director made by Hollandse Signaal Apparaten, Holland (Swedish and Chilean Navies). The radar director in each case gives visual and dark fire. Several other directors are in course of installation or development. In addition to installations on the RN "Daring," "Tribal," "County" and "Battle" classes, Seacat is in service with or on order for ships of the following navies:—Australia, Brazil, Chile, Federal Germany, India, Netherlands, New Zealand, Malaya, and Sweden.

Length 4 ft 10.3 in (1.48 m)
Body diam. 7½ in (0.19 m)
Wing span 2 ft 1.6 in (0.64 m)

SEA SPARROW

Raytheon (USA)

Short-range supersonic surface-to-air missile

Ship-launched version of the Sparrow air-to-air missile. Same rocket motor, guidance system, dimensions and weight. For close-range ship-defence against enemy aircraft. Cylindrical body with pivoted cruciform wing in line with cruciform tail fins. Powered by one Rocketdyne Mk 38 Mod O solid propellant rocket motor. Raytheon continuous wave semi-active radar guidance system.

Length 12 ft 0 in (3.66 m)
Body diam. 8 in (0.203 m)
Wing span 3 ft 4 in (1.016 m)
Firing weight 400 lb (181 kg)
Range over 8 miles (13 km)

SEASLUG Mk 1

Hawker Siddeley (UK)

Medium-range surface-to-air missile

Powered by a solid-propellant sustainer rocket motor in the body, with four smaller solid-propellant rocket boosters wrapped around. It has four fixed wings and four in-line control fins. Beam riding guidance is provided by the shipborne radar Type 901.

Length 19 ft 8 in (6.00 m)
Body diam. 1 ft 4 in (0.406 m)
Fin span 5 ft 6.6 in (1.69 m)

In service with RN on HMS *Devonshire*, *Hampshire*, *Kent*, and *London*

SEASLUG Mk 2

Description as for Mk 1, but with improved performance. Transistorized electronics; Shipborne radar is Type 901M; length increased to 20 ft 0 in (6.10 m)

In service with RN on HMS *Fife* and *Glamorgan*, and being installed on HMS *Antrim* and *Norfolk*

TALOS

Bendix (USA)

Long-range ramjet powered surface-to-air missile (with surface-to-surface capability)

Two stages, the first an Allegany Ballistics jettisonable solid-propellant booster rocket, the second a Bendix 28 in (710 mm) ramjet sustainer burning a kerosene/naphtha mixture. Warhead can be either nuclear or high explosive with proximity fuse. Talos is a beam-rider, with semi-acting homing radar (Sperry SPG-49 "lamp" radar) giving increased accuracy in the final stages of interception.

Length with booster 31 ft 3 in (9.53 m)
Length without booster 21 ft 0 in (6.40 m)
Body diam. 2 ft 6 in (0.76 m)
Wing span 9 ft 6 in (2.90 m)
Firing weight with booster 7 000 lb (3 175 kg)
without booster 3 000 lb (1 360 kg)
Speed at burn-out Mach 2.5
Slant range over 65 miles (105 km)

TARTAR RIM 24

General Dynamics (USA)

Supersonic surface-to-air missile

Powered by a dual-thrust booster/sustainer, solid-propellant rocket motor, and with a semi-active homing guidance system, this missile is operational on 31 USN vessels, 2 Australian, 4 French, 2 Italian, and one Japanese. It is designated as primary armament on small ships and secondary armament on larger ships. It is effective at target heights from 1 000 to 40 000 ft (305 to 12 200 m)

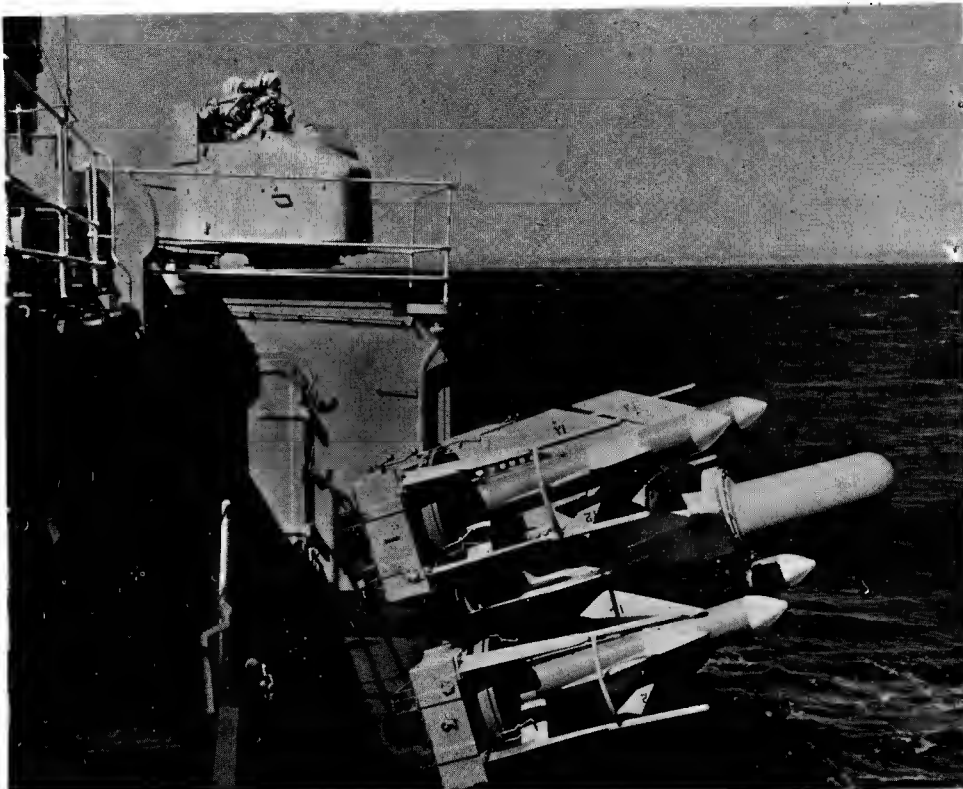
Length 15 ft 0 in (4.57 m)
Body diam. 1 ft 0 in (0.305 m)
Weight 1 200 lb (545 m)
Range over 10 miles (16 km)

ADVANCED TERRIER RIM-2 General Dynamics (USA)

Supersonic surface-to-air missile (with surface-to-surface capabilities)

Two-stage solid-propellant missile with jettisonable booster. Homing guidance system has increased effectiveness against low-flying aircraft. It is in service on 39 ships of the US Navy, 3 Italian, and one Netherlands.

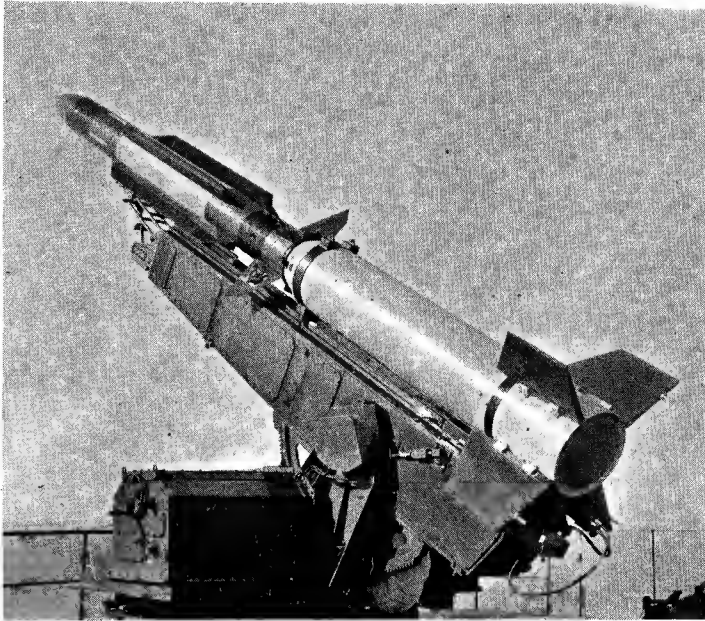
Length overall 27 ft 0 in (8.23 m)
Length of missile 14 ft 9½ in (4.52 m)
Missile diam. 1 ft 0 in (0.305 m)
Booster diam. 1 ft 4 in (0.406 m)
Weight 3 000 lb (1 360 kg)
Range over 20 miles



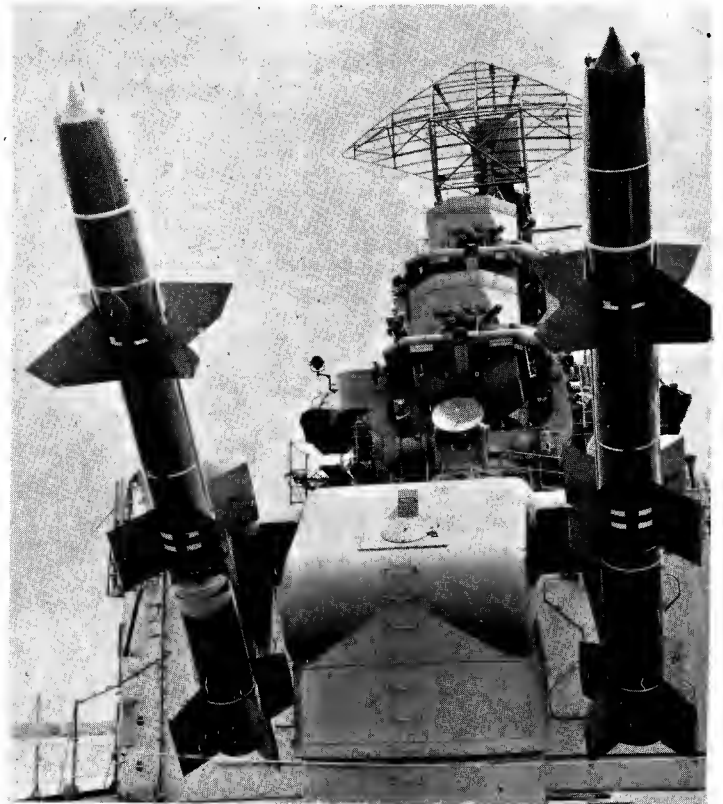
SEACAT

Short Bros & Harland (UK)

Surface-to-air—continued



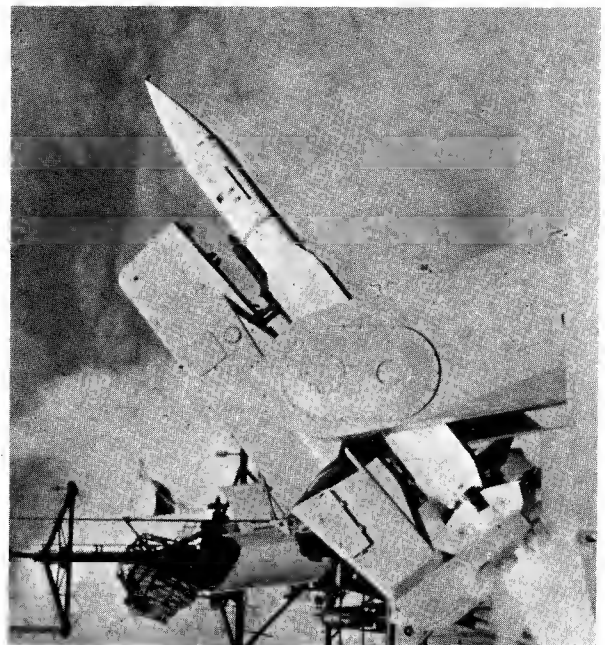
MASURCA Mk 2 Marine Française (France)



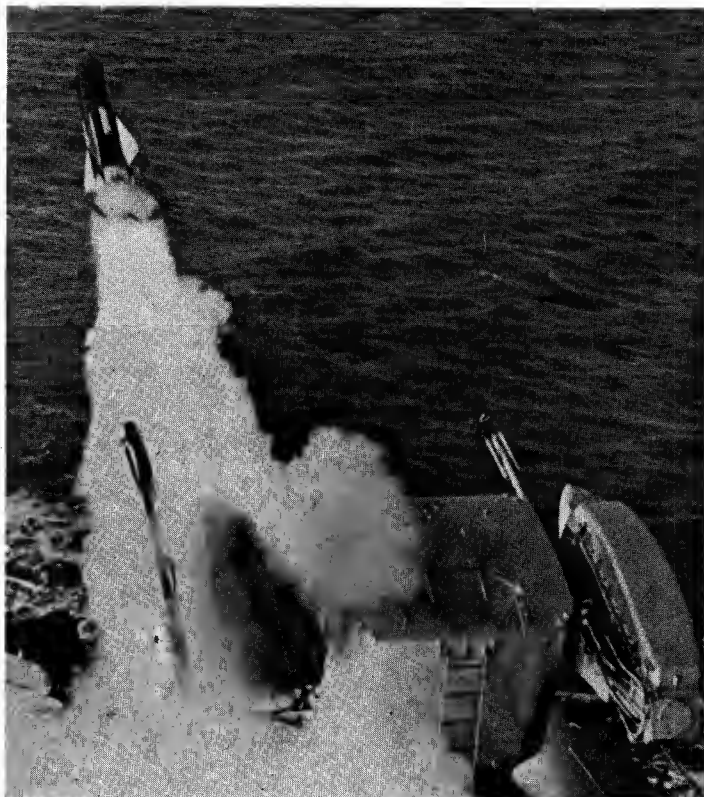
TALOS Bendix (USA)



STANDARD General Dynamics (USA)



TARTAR RIM 24 General Dynamics (USA)



SEA DART Hawker Siddeley (UK)



ADVANCED TERRIER RIM-2 General Dynamics (USA)

Anti-submarine systems

ASROC

Honeywell (USA)

MALAFON

Letécoère (France)

Surface ship-launched anti-submarine ballistic missile

The complete system comprises a Libroscope precision fire control computer fed with data from a Sangamo Electric underwater sonar detection device, the Asroc missile, and an eight-missile launcher. The missile consists of a ballistic solid-propellant rocket to which the payload (torpedo or depth charge) is connected by a special frame. After launching the missile follows a ballistic trajectory. At a point determined by the fire control system, the rocket is jettisoned and the payload continues on its trajectory.

When the payload is a torpedo, a parachute opens to slow its plunge into the water in the target area. The torpedo, a high speed, deep running, acoustic homing anti-submarine type, is activated by energizing a sea-water battery when it submerges, and then begins its search. When the payload is a depth charge it sinks to a pre-determined depth before detonation.

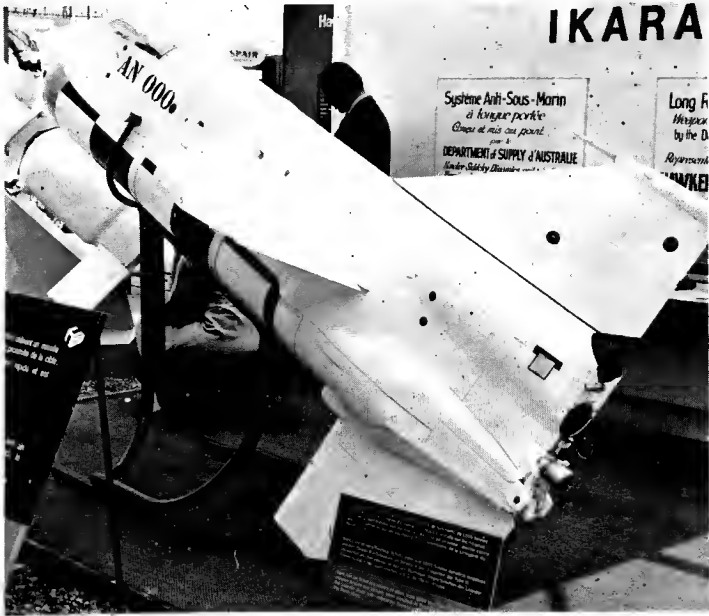
Length	15 ft 0 in (4.57 m)
Diameter	1 ft 0 in (0.30 m)
Fins, span	2 ft 6 in (0.76 m)
Firing weight	1 000 lb (450 kg)
range	1 to 6 miles (1.6 to 9.7 km)

Long-range anti-submarine weapon systems

With a cylindrical body containing a 21 in (533 mm) acoustic homing torpedo, and having wings and tail like an aeroplane, the Malafon weapon is ramp-launched with two solid propellant boosters (3-second firing time) attaining a speed of 515 mph (800 km/h) at burn-out, when the boosters are jettisoned. The remainder of the flight is unpowered and the weapon is maintained at a constant height 330 ft (100 m) by a radio-altimeter. Data from sonar equipment is fed into the command system which guides the weapon to the target area. About 875 yards (800 m) from the predicted location of the target the torpedo, ejected from the airframe by inertia when a tail parachute is streamed, enters the sea to search for and destroy its target.

Length	19 ft 8 in (6.00 m)
Wing span	9 ft 10 in (3.00 m)
Launch weight	2 865 lb (1 300 kg)
Torpedo weight	1 157 lb (525 kg)
Range	11 miles (18 km)

In service with French Navy



Ikara anti-submarine weapon on display at the 1967 Paris Air Show.

IKARA

Department of Supply (Australia)

Long range anti-submarine weapon system

The actual weapon is a rocket-propelled missile carrying an acoustic homing torpedo launched from a surface ship. Target information from ship-borne variable depth sonar and/or helicopter-carried "dunking sonar" is fed into a prediction system which, with radar/radio tracking and guidance, ensures that the torpedo, separated from the missile and lowered by parachute, enters the sea in the immediate vicinity of the target submarine. An active life of 20 minutes is reported for the torpedo to search and destroy.

Rocket motor	dual-thrust, solid propellant
Length	11 ft 0 in (3.35 m)
Wing span	5 ft 0 in (1.50 m)
Range	8-15 miles (13-24 km)

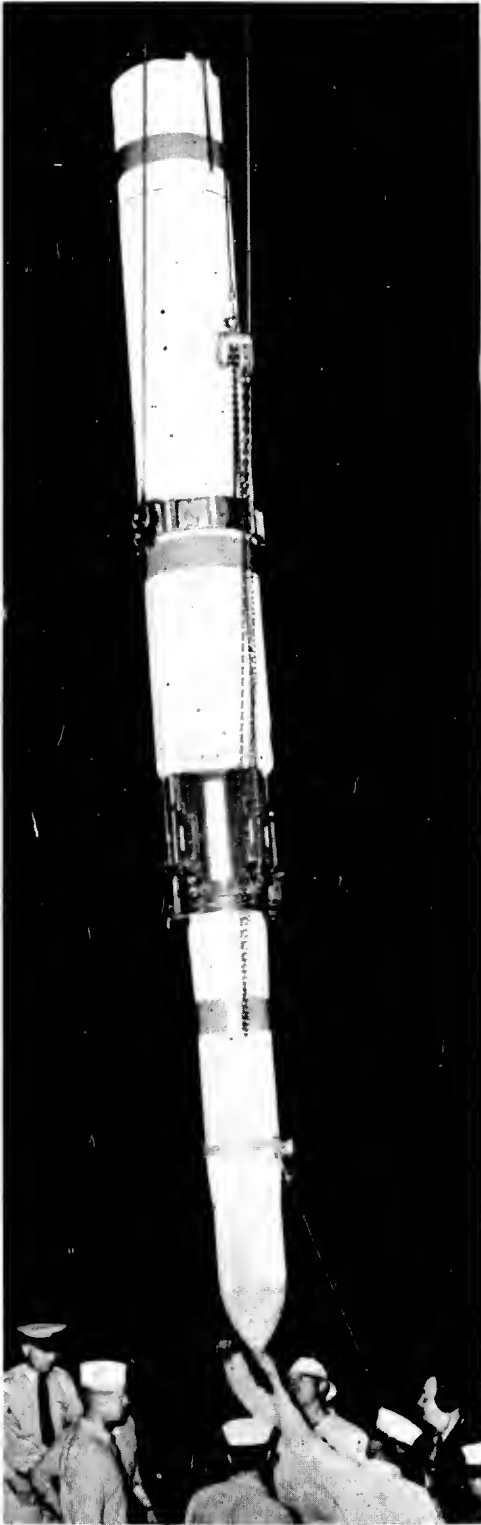
Operational with Royal Australian Navy and, in conjunction with Hawker Siddeley Dynamics and employing Action Data Automation (ADA) system, will be deployed in the new Type 82 destroyers for the Royal Navy.

MARK 46 MOD 1 TORPEDO

Aerojet/Gen./Honeywell (USA)

This is a high speed, deep running, acoustic homing anti-submarine torpedo, launched by surface craft, fixed wing aircraft, helicopters, ASROC and IKARA. It has active/passive acoustic guidance and carries a high explosive warhead.

Length	8 ft 4 in (2.54 m)
Body diam.	1 ft 0 in (0.324 m)
Weight	508 lb (230 kg)



SUBROC

Goodyear (USA)

Submarine-launched anti-submarine missile

The missile, a long range rocket-propelled inertially-guided nuclear depth bomb, is part of a complex weapons system which includes advanced long range sonar and a specially designed fire control system. This can handle other submarine-launched weapons e.g. conventional, homing or wire-guided torpedoes, in addition to Subroc. The launching submarine can be moving and need not be pointed at target. Conventionally ejected from standard submarine torpedo tubes, the missile's solid-propellant rocket motor ignites under water at a safe distance from the submarine. Special thrust-vectoring controls steer the missile onto its correct course, guide its angle of emergence from the water, and control its stability in powered flight. At a predetermined velocity, depending on the target's range, the rocket separates from the depth bomb which continues toward the target controlled by the inertial guidance system. Upon re-entry into the water a shock-mitigating device cushions the impact, and the bomb sinks and explodes.

Length overall	21 ft 0 in (6.40 m)
Max. diam.	1 ft 9 in (0.533 m)
Launching weight	4 000 lb (1 815 kg)
Max. range	25-30 miles (40-48 km)

GENERAL INDEX

(Named Ships only)

GENERAL INDEX

(Named Ships only)

Abbreviations in () following the name of the ship indicates the country

Al	Albania	ES	El Salvador	Kor	Korea	R.	Rumania
A	Argentina	Et	Ethiopia	Ku	Kuwait	S.A.	South Africa
R.A.N.	Australia	G	Gaboon	L	Laos	Sau	Saudi Arabia
8	Belgium	Ger	West Germany	Le	Lebanon	Sen	Senegal
8r	Brazil	GE	East Germany	Li	Liberia	S.L.	Sierra Leone
8ru	Brunei	Gh	Ghana	Lib	Libya	Som	Somalia
8ul	Bulgaria	Gr	Greece	Ma	Madagascar	Sp	Spain
8ur	Burma	Gu	Guatemala	M	Malaya	Sw	Sweden
Ca	Cambodia	Gui	Guinea	Mal	Mal	Su	Sudan
Cam	Cameroon	H.K.	Hong Kong	Mex	Mexico	Sy	Syria
R.C.N.	Canada	Hon	Honduras	Mor	Morocco	T.C.	Taiwan China
Chi	Chile	Hun	Hungary	N	Netherlands	Th	Thailand
C	China	I.C.	Ivory Coast	R.N.Z.	New Zealand	To	Togo
Cey	Ceylon	Ice	Iceland	Nic	Nicaragua	Tu	Tunisia
Co	Congo	In	India	Nig	Nigeria	T	Turkey
Col	Colombia	Ind	Indonesia	Nor	Norway	U.K.	United Kingdom
C.R.	Costa Rica	Ir	Iran	Pa	Pakistan	U.S.A.	United States of America
Cu	Cuba	Ira	Iraq	Pan	Panama	U.S.S.R.	
D	Denmark	Is	Israel	Par	Paraguay	Ven	Venezuela
Dom	Dominican	I	Italy	P	Peru	V.M.	Viet Minh
EA	East Africa	Jam	Jamaica	Ph	Philippines	Y	Yugoslavia
Ec	Ecuador	J	Japan	Po	Poland	Z	Zanzibar
Eg	Egypt	K.N.	Korea North	Por	Portugal		
Ei	Eire	Ke	Kenya				

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		Fort Marion (U.S.A.)	420			General William O. Darby (U.S.A.)	428
		Fort Rosalie (U.K.)	324			General William O. Darby (U.S.A.)	428
		Fort Sandusky (U.K.)	324			General William O. Darby (U.S.A.)	428
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